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dv01
Insights

COVID-19 PERFORMANCE REPORT VOLUME 5

Bending the Impairment Curve

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Introduction

It has been over two months since COVID-19 was declared a pandemic and ushered in an economic and health crisis not seen since prior to World War II. Households and businesses have been forced to adapt to new realities, and scary economic outlooks and jobless numbers remain stubbornly high. As federal and state governments face the difficult and uneven process of easing quarantine restrictions, consumer credit performance has emerged as a shining beacon for investors and stakeholders. Total payment impairments have hit a near-term peak in the online lending universe and have begun to decline in earnest. Conversely, the first full month of COVID-19 mortgage performance has shown divergent impairment and prepayment trends between traditional GSE loans in CRT and non-QM, which represents more of the self-employed universe.

In the fifth installment of our COVID-19 Performance Report, dv01 provides further clarity on the decline in total payment impairments and the resumption of payments on modifications by borrowers. We also cover the second installment of performance trends in the non-QM mortgage universe, establish a new performance stratification measure, and introduce our first section discussing performance of Credit Risk Transfer (CRT) securitizations. Finally, we unveil a discussion of prepayment trends in both non-QM and CRT mortgages, highlighting the significant impact lower rates will have on further improving households' financial position.

Given that mortgage data is only updated through the end of April, the conclusions from mortgage performance will differ from what we have observed in the online lending universe, and we have not yet observed a flattening in performance. dv01 anticipates more clarity on whether the bifurcation between CRT and non-QM continues, which is when May data will become available. That said, there are important early performance indicators that dv01 has observed.

Terminology

- Delinquency: A loan is delinquent when a borrower is past due on their loan payment and is not in an active modification.
- Modification: A modified loan means there has been a change made to the original agreed-upon terms of a loan or that a borrower has been offered a temporary pause on making loan repayments. Borrowers must contact the issuers directly and request a modification in order to qualify; they are not offered automatically. Modifications are discussed in further detail in the Modification and Hardship Relief Trend Analysis section.
- Payment Impairment: A payment impairment refers to any loan that is delinquent or has an active modification status. This category is a combination of delinquencies and modifications.
- Negative Outcome: Any loan that has been charged off or became delinquent. We explore negative outcomes in the Historical Modification and Hardship Relief Program Review section.

Online Lending Summary

- Total payment impairments flattened at the end of April and have decreased throughout May.
- Total payment impairments have thus far peaked below changes in unemployment and underemployment.
- New payment impairments throughout the month of May were the lowest since pre-2019. The expected spike of payment impairments at the start of the month—around the early due dates—did not occur in May.
- Delinquency rates continue to decrease and are now well below historical levels.
- Modifications comprise over 70% of all payment impairments, which limit near-term defaults. Over 90% of modifications are a short-term pause on payments.
- Analysis of prior region-wide modification efforts enacted during the 2017 hurricane season show that modified borrowers are 3X more likely to avoid ultimate defaults versus loans that go straight into delinquency.

- Nearly a quarter of all COVID-19-modified loans have made their first post-modification payment, despite having the ability to extend as needed. This percentage is over 50% for 1-month modifications.
- All geographic regions discussed are showing declining impairment rates, except for the tourism regions. Even in tourism regions, impairments peaked well below levels of unemployment.
- Lower-grade, higher-risk loans show worse performance than higher-grade loans, but their rate of increase has slowed substantially.
- Stakeholders should consider a loan's age and a borrower's homeownership status as additional factors in understanding performance.
- Income, when adjusted for other characteristics, has not shown substantial predictive power in determining payment behavior.

Non-QM Summary

- April impairments outpaced online lending impairment rates and were multiples of the change in CRT, though the rate still remained below change in unemployment.
- Non-QM represents many self-employed borrowers more vulnerable and suffering more hardships than consumers as a whole.
- Modifications were previously nonexistent in non-QM loans, but have ramped up substantially over a month, versus taking nearly two years during the 2008 housing crisis.
- Credit curing of prior delinquent loans offers glimmer of optimism for investors.
- Documentation type played the most important role in differentiating credit performance and will remain the key driver of future performance. Documentation types related to self-employed borrowers had 2-3x the impairment rate increase versus non-self employed document types.
- Updated LTV—powered by HouseCanary—shows substantial differences between low and higher LTV loans.
- FICO score played an important role as well but other characteristics did not show significant differentiation in April performance.
- Prepayments were substantially lower but still impressive to see some borrowers being able to lower rates are refinance.

CRT Summary

- Total payment impairments increased in April at a fifth of the change in unemployment figures, and below changes in online lending payment impairments, which is a very different outcome than the previous mortgage crisis.
- Substantial credit curing still occurred in April despite the difficult credit environment.
- Payment impairment rates were lower in higher FICO bands, as well as lower DTI buckets.
- LTV has not been shown to be a predictor of behavior in COVID-19 payment impairments.
- Geographic performance has been inconsistent with the online lending and non-QM sectors for every state.
- Prepayments hit multi-year highs as the first wave of borrowers took advantage of low rates, a trend that can persist for months to come.
- Collateral characteristics showed different trends in prepayment versus payment impairment behavior.

Size and Specs of Dataset

The online lending analysis looked at over 1.7 million active loans with a total outstanding balance of $19B+ from leading U.S. online lenders. The loans have a weighted average ("WAVG") FICO score of 715, weighted average coupon ("WAC") of 13.6%, and an average balance of approximately $11,400. dv01 accessed and analyzed these loans via securitizations, pass-through certificates, and aggregated platform-level reporting.

The non-QM mortgage analysis is composed solely of non-QM loans issued since 2018 and consists of over 20,000 loans with a total current balance of $8B+. The loans have a WAVG FICO score of 738, weighted average LTV of 66.7%, WAC of 5.6%, weighted average DTI ratio of 32.2%, and an average balance of approximately $390,000.

Note: dv01 acknowledges that the non-QM section of this report is substantially smaller than the online lending section in terms of loan count, as well as in the percentage of the universe covered. We acknowledge the limitation this presents; however, we still view our conclusions as significant points of insight on the state of the market. With that in mind, stakeholders should request a higher level of insight from both existing and newly issued mortgage bonds. This is especially important as COVID-19 has forced a renewed discussion about credit characteristics. dv01 encourages investors to reach out to market participants to request that their data be housed in the dv01 architecture for easy access, thorough validation, and multi-faceted product functionality to assist in making informed insights and investment decisions.

The CRT mortgage analysis is composed solely of loans from the STACR platform with data updated through the May remittance period. The universe comprises over 2.2 million loans with a balance of over $450B+. The loans have a WAVG FICO score of 753, weighted average LTV of 80.8%, WAC of 4.2%, weighted average DTI ratio of ~35%, and an average balance of approximately $208,000.

Online Lending Analysis

Methodology

The data in this report represents loan performance activity reported from January 1, 2019 through May 24, 2020. As with prior reports, only issuers reporting loan information on a daily cadence are included. The report is based on the full population of loans without any filtering or sampling for the most accurate and complete picture. All issuer information is aggregated, and no issuer-specific commentary is provided.

Beyond looking solely at aggregate performance, dv01 filtered and stratified performance based on a number of attributes. Among the most commonly reviewed attributes is loan grade, which is an issuer-defined categorization of the issuer's own loan portfolio based on credit attributes and linked to underlying loan interest rates. Because of the varying grade classifications used by different issuers, dv01 utilized heuristic assumptions to group grades into the following three categories for an apples-to-apples comparison:

- Top Grade: Represents lower-risk, lower-interest-rate loans
- Middle Grade: Represents medium-risk, medium-interest-rate loans
- Bottom Grade: Represents higher-risk, higher-interest-rate loans

On top of loan grade analysis, users can stratify performance by geographic areas down to the state or ZIP code level. To better understand the time and magnitude of COVID-19's impact across the country, dv01 evaluated performance trends in three distinct regions:

1. States that instituted earlier and more aggressive quarantine programs (California, Connecticut, New Jersey, and New York).
2. States with above average exposure to tourism (Florida, Hawaii, and Nevada).
3. States with high exposure to the oil sector (Alaska, Louisiana, North Dakota, Oklahoma, and Texas).

Investors interested in reviewing consumer unsecured loan performance can do so via dv01's Market Surveillance, Portfolio Surveillance, and Securitization offerings. Users can reconcile daily cash flows, anticipated payment schedules, due dates, and view daily delinquency trends.

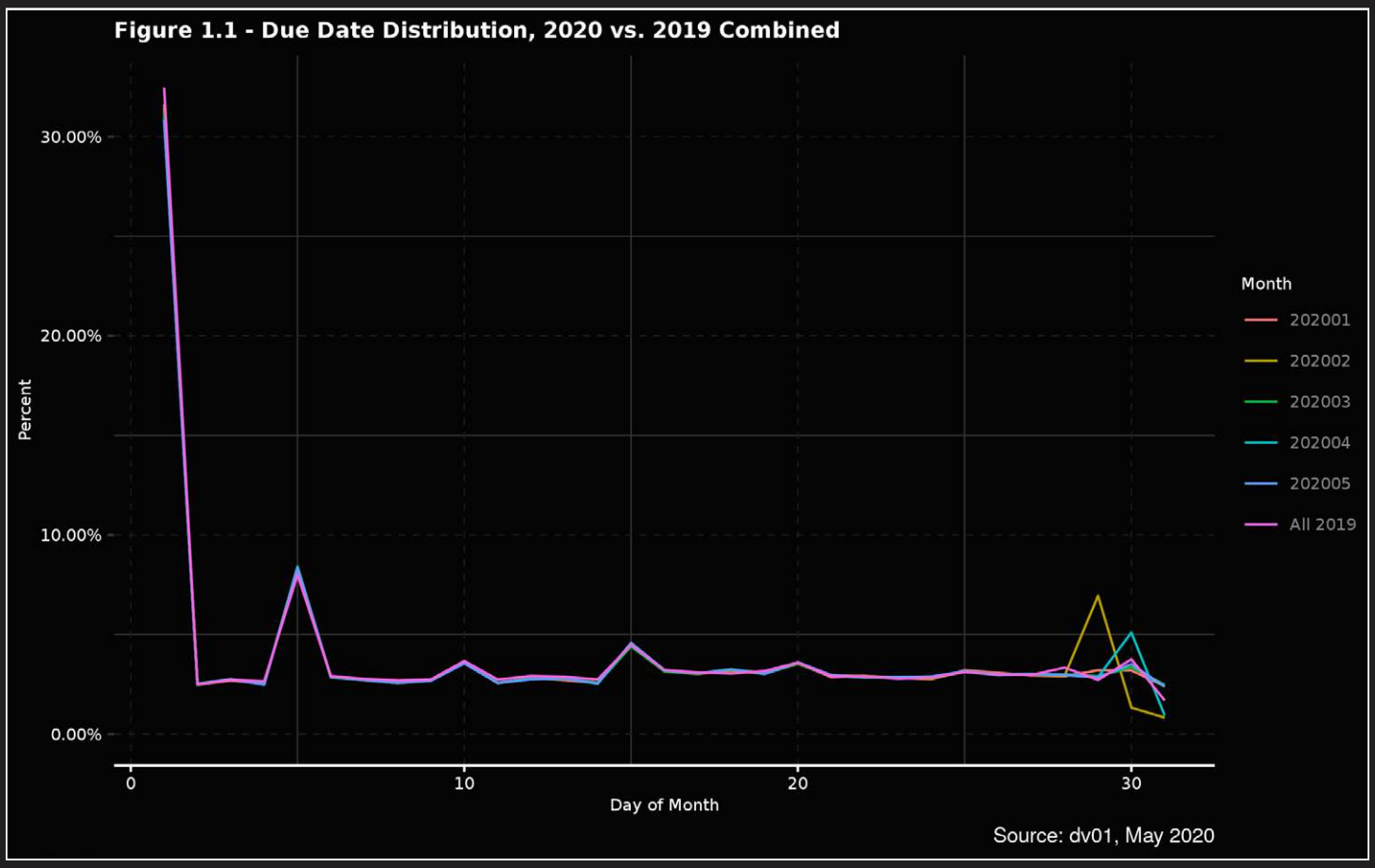
A note about our prior report: In conducting the analysis for this edition of our COVID-19 report, we observed a reporting inconsistency where some modifications were being listed as no longer active without definitive proof of resumed repayment or a transition into delinquency. The process of normalizing this reporting across multiple issuers to a uniform standard is challenging because of the speed at which relief programs are deployed. As we derive a clearer payment picture, we had to reclassify these loans as remaining impaired. Many of these loans may not have actually faced their first post-modification payment yet, and some may have deferred for another month; none of them were actually delinquent or took a loss.

The impact of these loans was an understatement of total payment impairments and total modifications by approximately 0.5% at the beginning of May; the impairment curve now flattens at the end of April. A more visible change is in **Figure 7.1**, where the repayment rate of total modifications has been reduced by 7%, and in other charts which will be noted with an asterisk below. No delinquency, modification, or impairment charts were impacted by this change.

Distribution of Loan Payment Due Date

To better understand delinquency and modification trends, we must first look at the distribution of loan due dates in a given month, which is the contractual date by which a loan payment is due each month. If a loan does not receive a payment by the due date, it becomes delinquent. Regarding modifications, a loan can be modified at any point, including prior to its due date. Borrowers, however, may delay contacting issuers or resolving loans until the due date, which is certainly understandable given the magnitude of other events going on. Therefore, modification behavior still increases around due dates; this relationship, however, is not as clearly defined as for delinquencies.

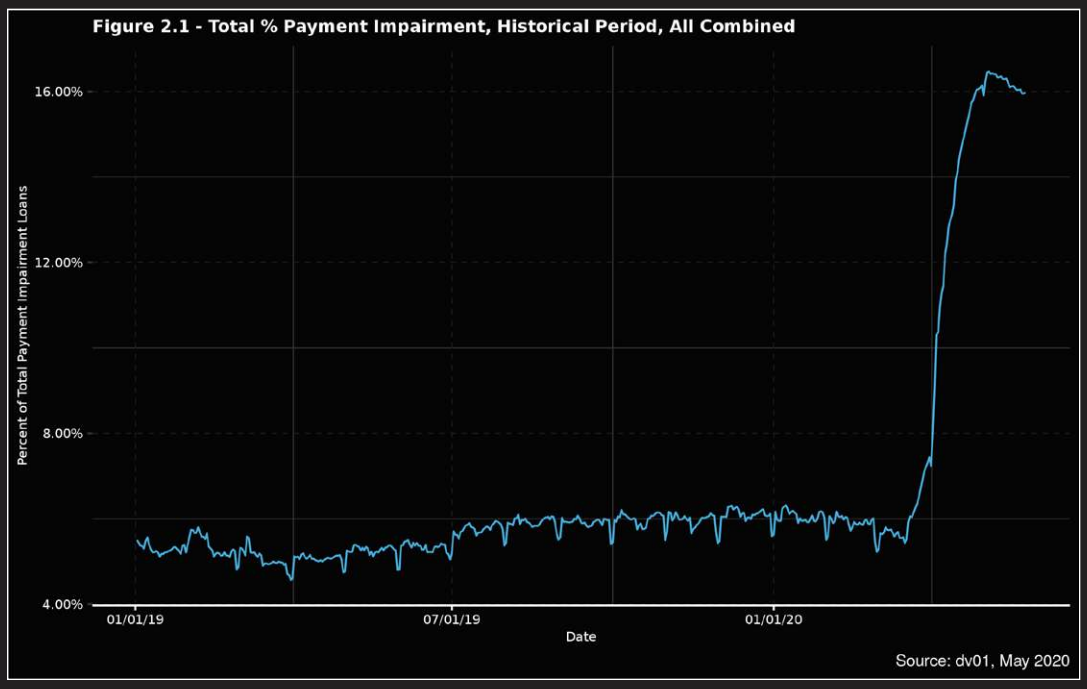
Figure 1.1 illustrates the distribution of due dates and shows that loan due dates are not evenly distributed. The largest portions are due at the beginning of the month, with a small spike around the 15th, leveling off toward the end of the month. The dramatic spike at the end of February is due to the month only having 29 days.



Flattening the Curve: Payment Impairment Trend Analysis

Figure 2.1 shows the total percentage of payment impaired loans over time. The trend shows a dramatic increase in payment impairments since March 18th and capping at the end of April. Since then, total payment impairments have fallen noticeably, even as the early due dates of May have passed.

In order to illustrate how payment impairment rates normally change throughout the month, **Figure 2.2** shows total payment impairments broken out by day of the month for 2020 and 2019 combined. In this chart we see the flattening of the curve (just as some states have achieved in new COVID-19 cases) beginning in earnest after April 20th, before falling noticeably since the end of April.



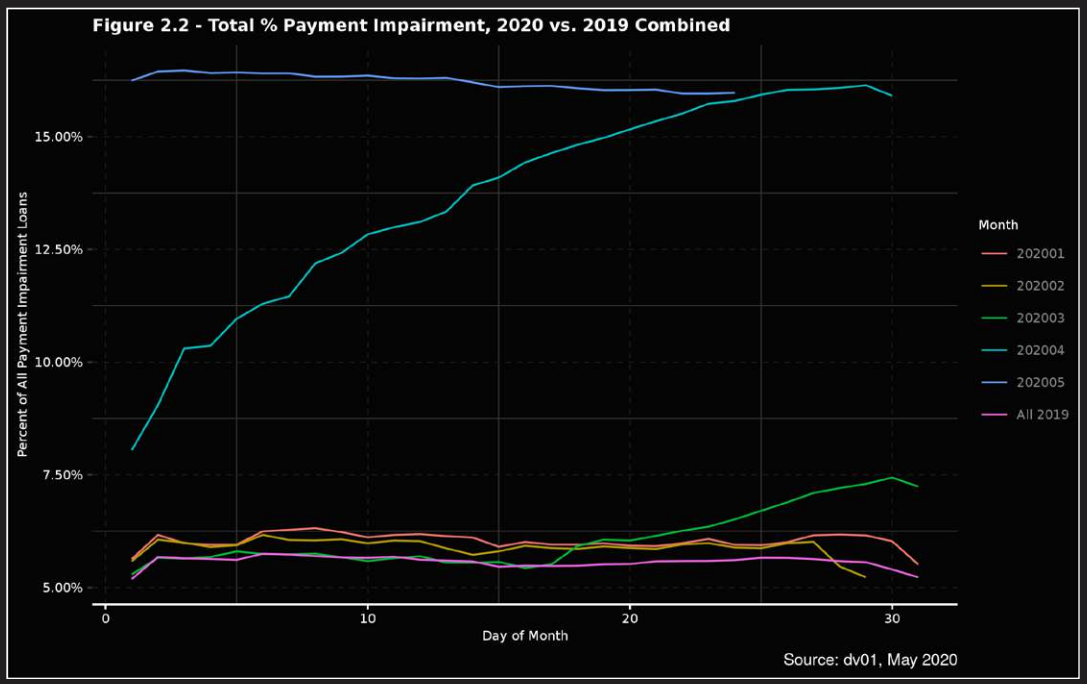
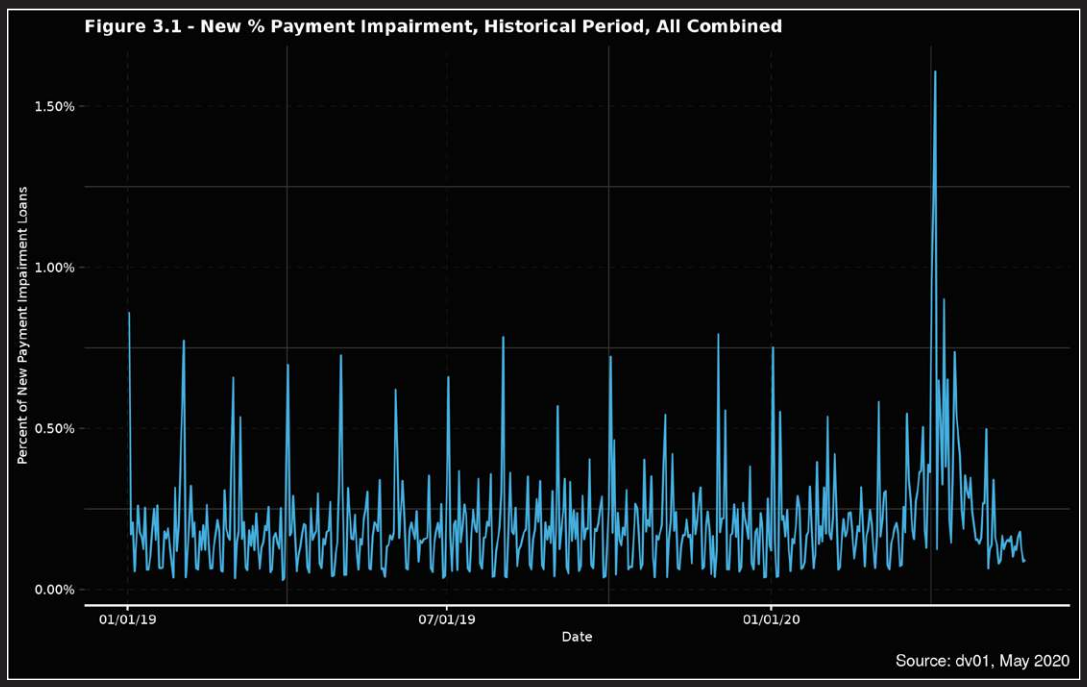
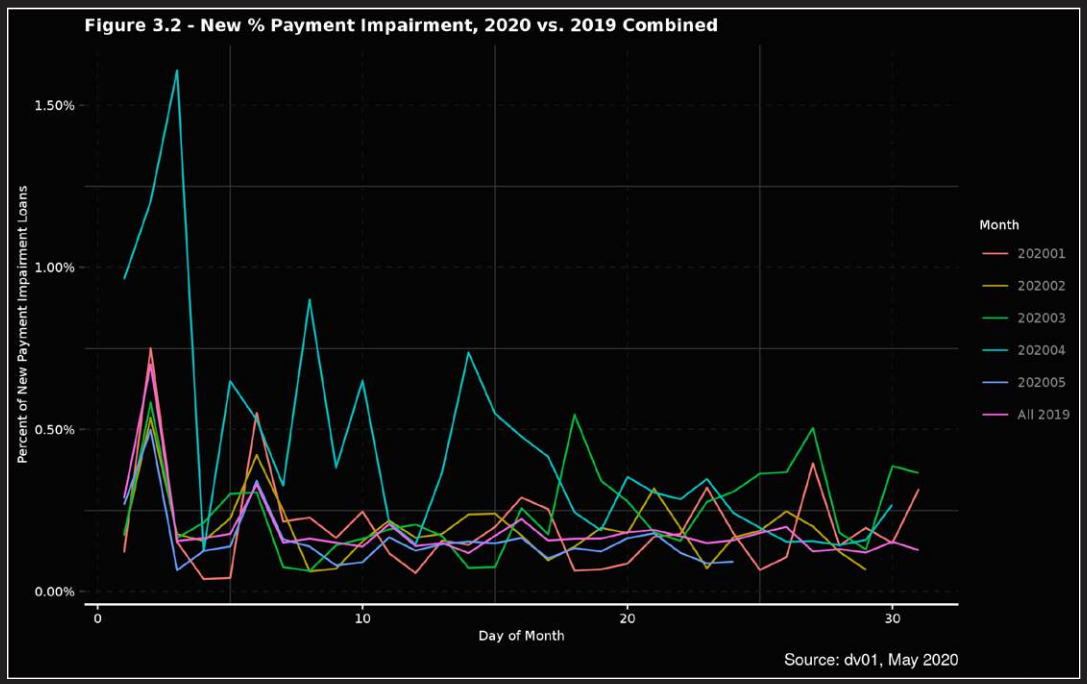


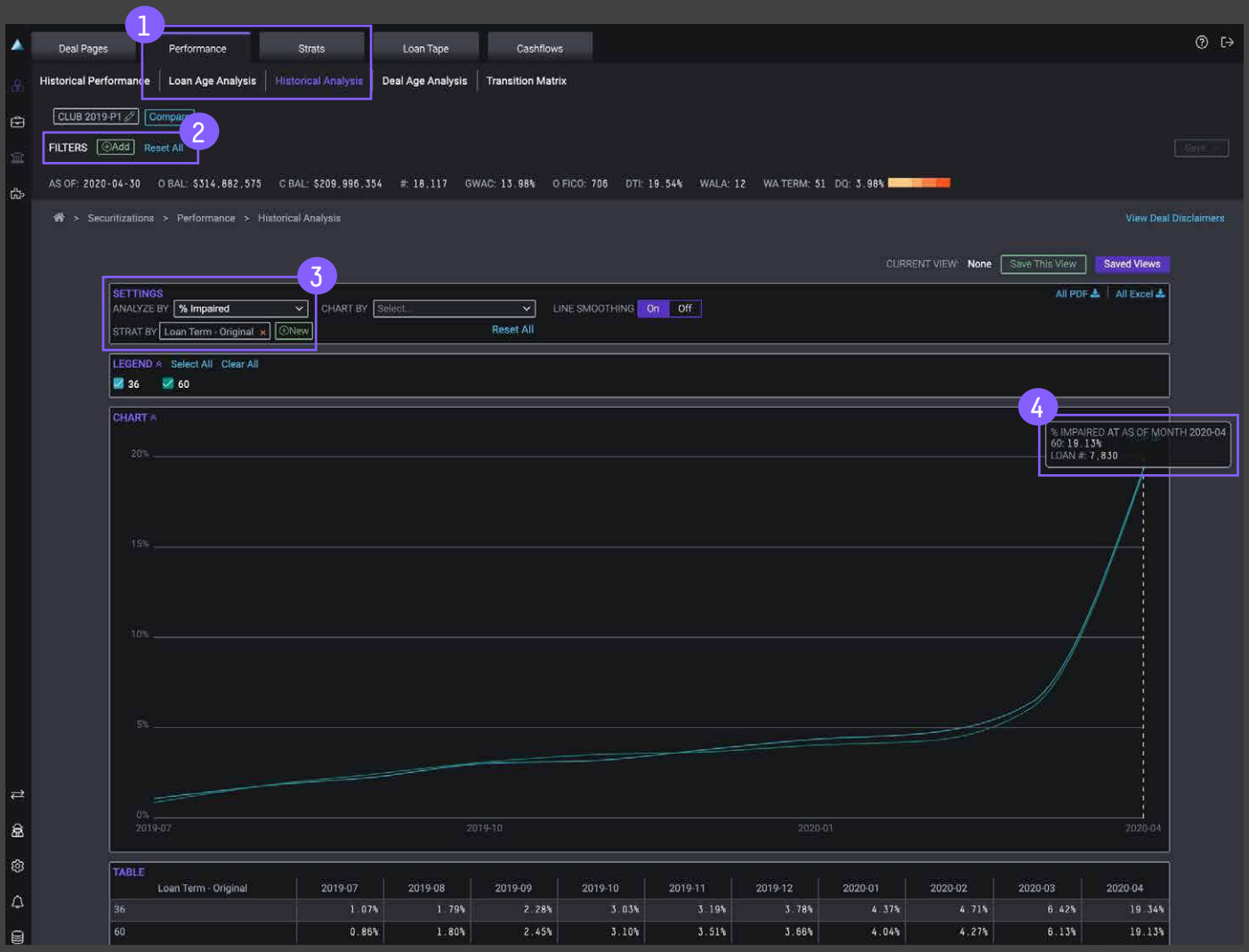
Figure 3.1 shows the percentage of newly impaired loans (i.e., loans that became impaired for the first time on a given day). dv01 noticed a significant increase in new payment impairments starting on March 18th and continuing through April. Since the large spikes in the beginning of April (around when the largest percent of loans came due), the rate of increase for new payment impairments has slowed back to historical patterns. More importantly, May has shown by far the smallest early month spike in delinquencies since at least 2019.



This becomes more visible in **Figure 3.2**, which shows new payment impairments by day of the month. After the second week of April, new payment impairments settled back to pre-COVID-19 levels, with some visible performance normality; as noted above, that behavior has largely carried into May. The smaller May payment impairment change is more visible in **Figure 3.2**, as is the fact that new payment impairments remained below historical averages after the early spike.



How to Analyze by % Impaired in the dv01 App



Loan Term - Original	2019-07	2019-08	2019-09	2019-10	2019-11	2019-12	2020-01	2020-02	2020-03	2020-04
36	1.07%	1.79%	2.28%	3.03%	3.19%	3.78%	4.37%	4.71%	6.42%	19.34%
60	0.86%	1.80%	2.45%	3.10%	3.51%	3.66%	4.04%	4.27%	6.13%	19.13%

1. Targeted analytical tools can be found under the `Performance` tab within dv01's Securitization product line. `Historical Analysis` normalizes data by calendar month; these views can be leveraged to identify trends in seasonality and broader market events that may impact performance behavior at specific points in time.
2. Select from a menu of attributes by which you can filter your dataset.
3. Analyze by `% Impaired` to display this metric in the chart. You can add a strat option if you would like to cohort the pool by a specific attribute (shown here as `Loan Term—Original`).
4. Hovering over a line will show a tooltip containing additional metrics for that point in time.

Since the start of this report's publication, dv01 has consistently called out the strong performance of online loans, especially in context of the changes in unemployment. Online lending payment impairments, which some worried might be multiples of unemployment change, are currently less than half the change in unemployment. Total payment impairments are now established at 9% above historical levels, tracking well below the most recent U.S. Bureau of Labor Statistics adjusted unemployment rate of 19.5%, which is an increase of nearly 16% from February.[1] What is even more impressive is that May payment impairments have trended downward even as over 5 million initial jobless claims were filed through May 16th.

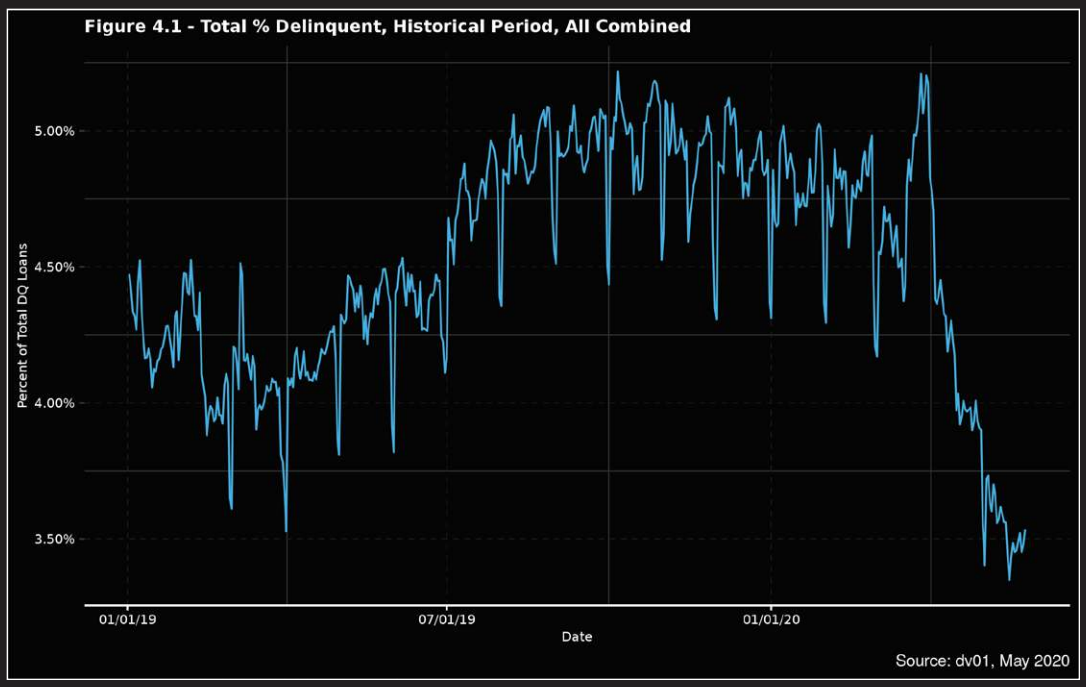
> *"Online lending payment impairments, which some worried might be multiples of unemployment change, are currently less than half the change in unemployment."*
>
> *— Vadim Verkhoglyad, CFA, Principal Analyst*

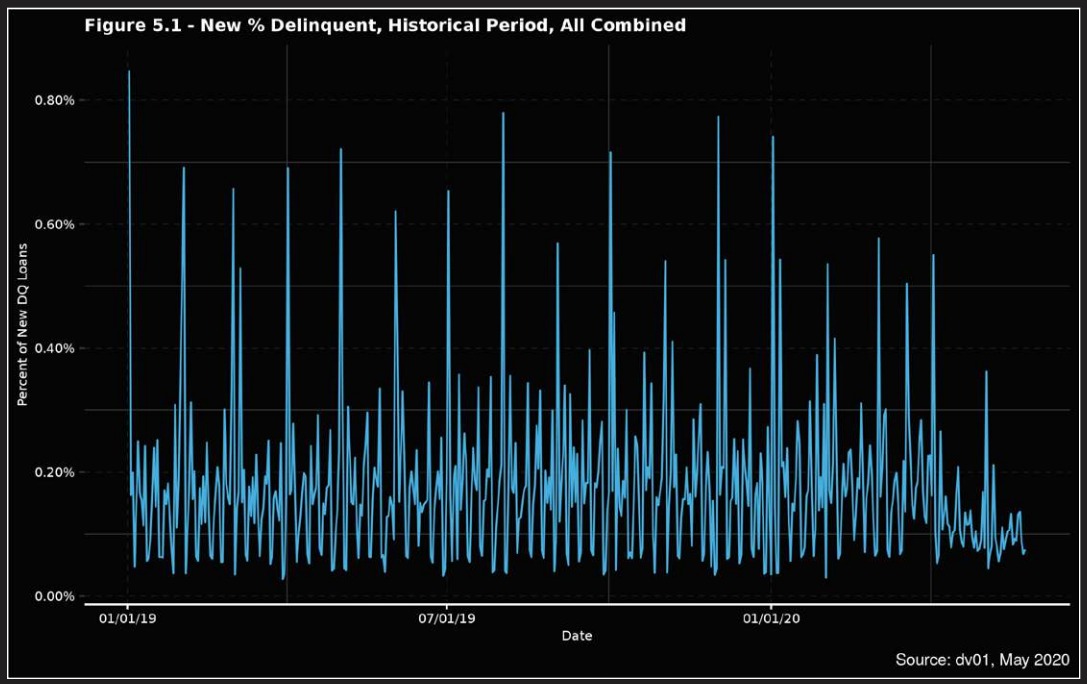
The declines in payment impairments suggest that consumers are being proactive about managing their debt burdens, and on their installment loans in particular, even under onerous economic circumstances. Consumers came into the COVID-19 crisis with healthy debt levels[2] relative to income and wealth[3], as well as historically low debt service ratios.[4] It is no surprise then to see credit show earlier signs of recovery, which is a very different picture than the 2008 crisis. These are very positive trends for investors and indicators of the strength, proactive responses, resiliency, and long-term sustainability of online lending as a steady and established product and asset class.

1 https://reinhart-partnersinc.com/week_in_review/may-8-2020/
2 https://www.newyorkfed.org/medialibrary/interactives/householdcredit/data/pdf/hhdc_2020q1.pdf
3 https://www.federalreserve.gov/releases/z1/dataviz/dfa/distribute/chart/
4 https://www.federalreserve.gov/releases/housedebt/default.htm

Delinquency Trend Analysis

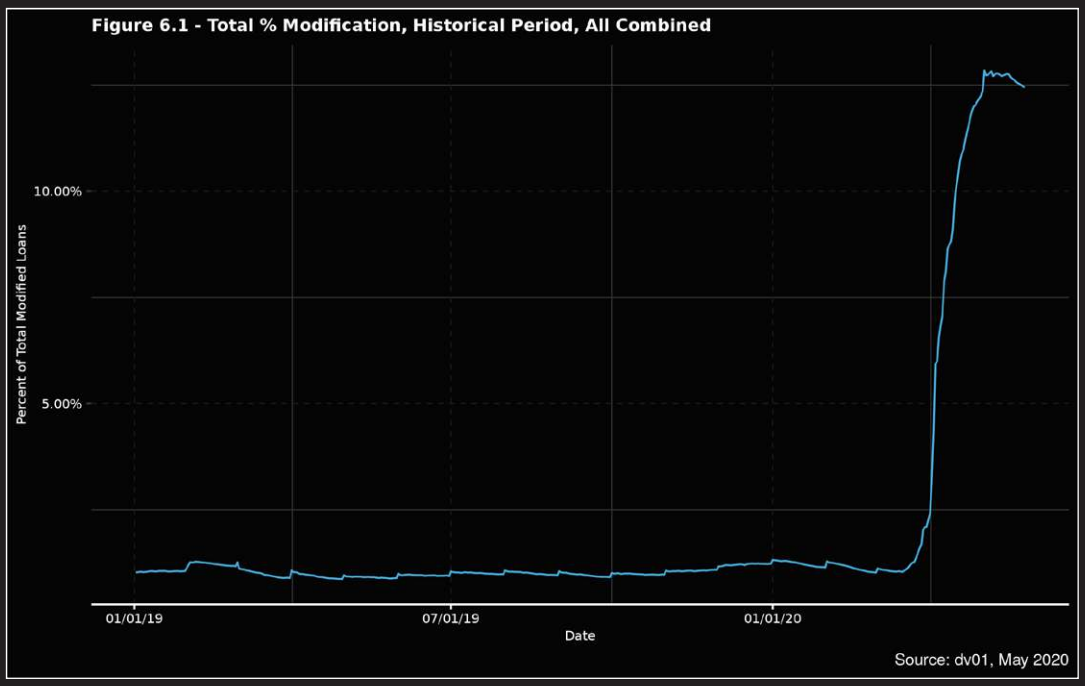
Figure 4.1 illustrates the total percentage of loans that are delinquent. Delinquencies have continued their significant decline since late March and are now well below historical averages (x%). After the normal start-of-month increase in early May, delinquencies have continued to trend downward and are now at multi-year lows. **Figure 5.1** shows the rate of new delinquencies, which has also slowed to below historical trends. As alluded to earlier, the early-month spike in May was at historical lows and has continued to trend below historical levels since.





Modification and Hardship Relief Trend Analysis

As illustrated in **Figure 6.1**, online lenders have massively expanded modification efforts to help borrowers, with total modifications growing from March 18th and continued through the end of April, before plateauing. Modifications used to comprise a small portion of payment impairments (historically 1-2% versus 6-7% total payment impairments), but now comprise a majority (11.5% modifications versus 16.5% payment impairments). The majority of modifications are made to borrowers that are current on their loans. Additionally, 81% of borrowers have 0 days past due at time of modification, and 94% of loans are less than 30 days past due.



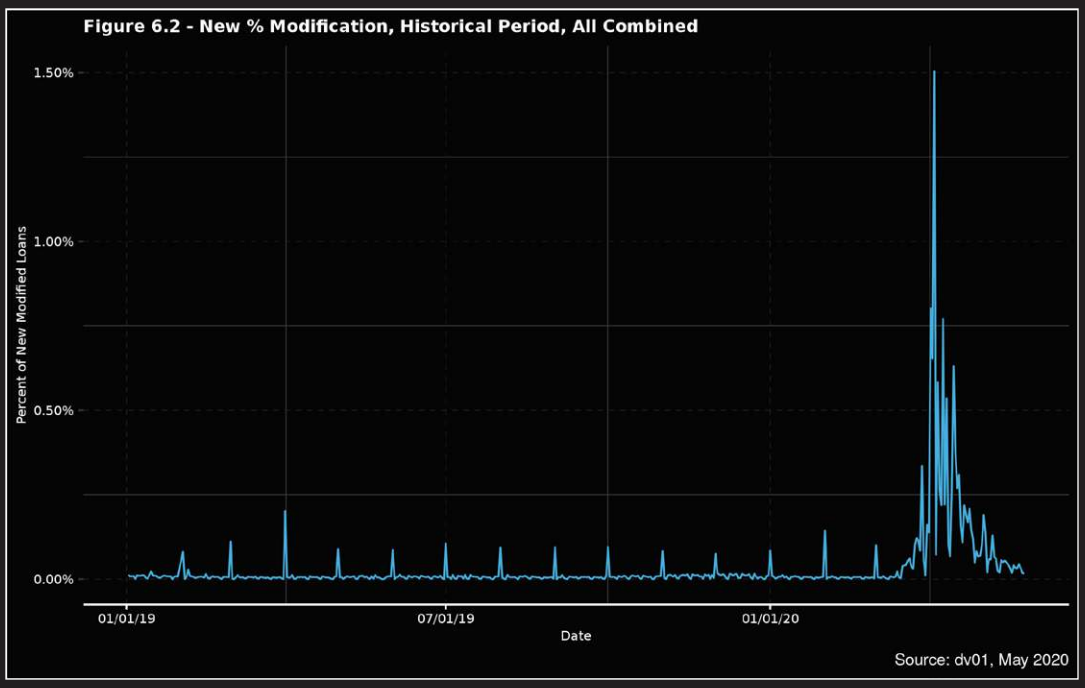


Figure 6.2 shows the percentage of new modifications occurring each day. New modifications started increasing on March 18th and continued through the beginning of April, as the largest percentage of loans faced their first due date since COVID-19 was declared a pandemic. The new rate of modification has slowed substantially since the end of April and is now close to historical levels.

The spike in modifications around early due dates we discussed in our prior report was entirely absent in May. Coupled with the below-average delinquency spike in May, it indicates that borrowers in tough economic situations have been proactive in addressing their issues and that far fewer new modifications were needed in early May as new hardships have stabilized. Further analysis of these trends will be discussed below in the modification payment section.

We can see the aforementioned behavior in greater detail in **Figure 6.3**. This chart categorizes all outstanding modifications by the week the modification was made. Modifications rose from mid March through early April (50% of all modifications were done during the weeks of March 29th and April 5th) as issuers ramped up their relief programs and borrowers began facing economic hardship. Conversely, there have been few modifications done since the second week of April and virtually none in May, further clarifying the trend of improving payment payment behavior.

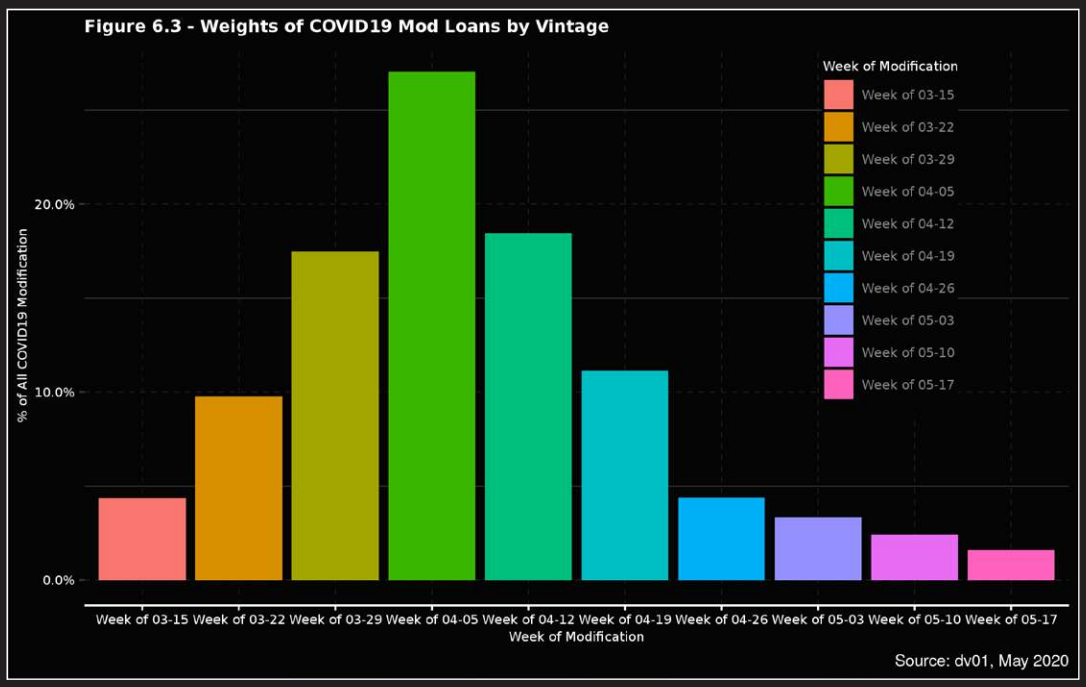
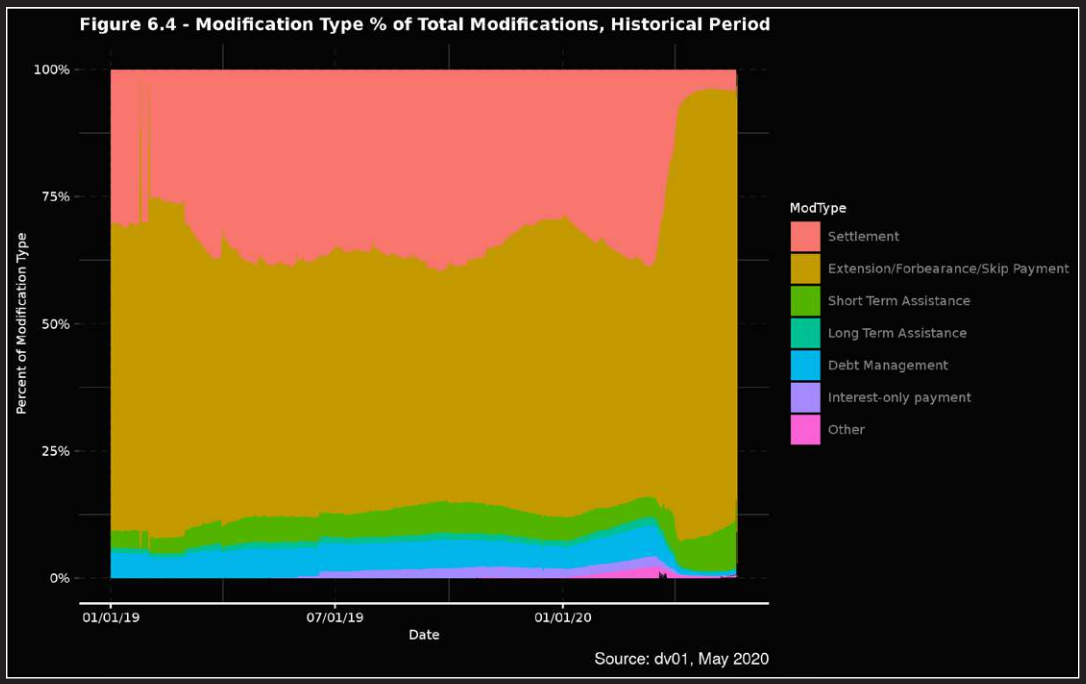
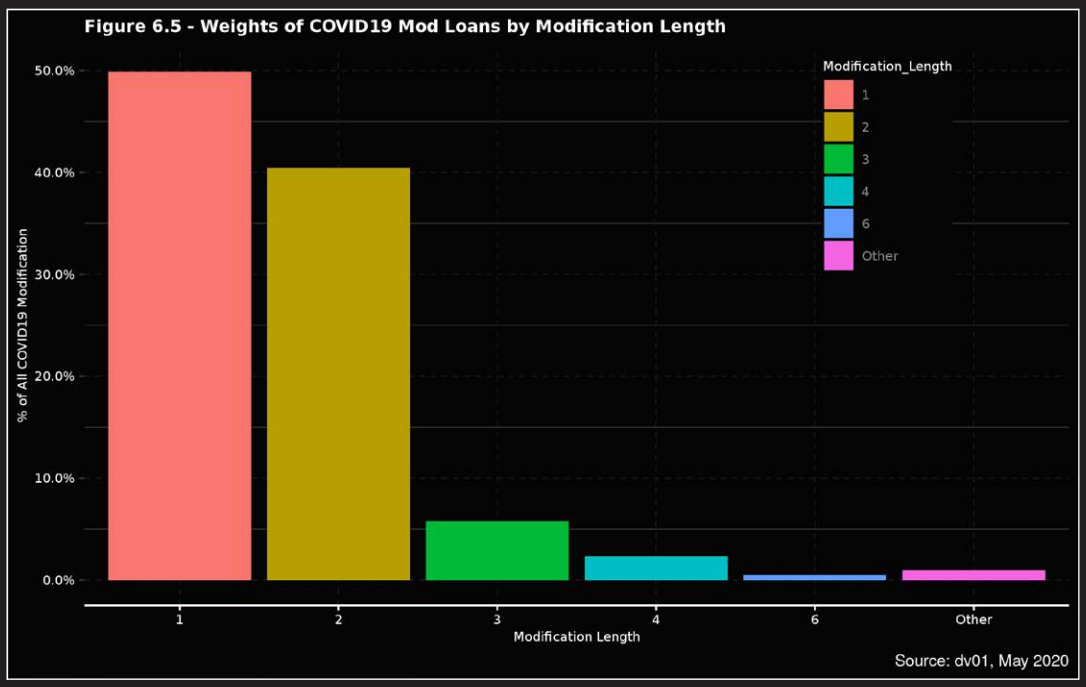


Figure 6.4 shows a breakdown of the types of modifications that borrowers have been offered. The vast majority of modifications come in the form of an extension or forbearance, wherein a borrower is granted a temporary stay of payments for a period of one month or longer before resuming their prior payments. The interest rate, principal, and payment do not permanently change in this type of modification.



To better understand the extension programs, dv01 introduces **Figure 6.5** below showing the length of the modification. We observe that 90% of modification terms are less than two months, but we highlight an important caveat to this data. Both one- and two-month modification programs allow borrowers to extend their deferral periods if difficult circumstances persist. As with the initial modification, this is not offered automatically and borrowers still need to contact issuers and request extensions. However, as we will discuss in the next section, many borrowers have already begun to repay their modifications, despite the continually difficult economic climate.



Historical Modification and Hardship Relief Program Review

In our past 2 reports, dv01 has covered in depth past performance of bulk modifications efforts offered in certain regions - notably hurricane-related modifications in Texas and Florida in 2017. In this report we summarize our prior findings and note the conclusions, but for a more thorough read please review the same sections in the previous publications. We took loans in Texas and Florida from August - November 2017 and categorized them into 6 categories Current Modified, Current non-modified and 4 delinquency buckets. We then analyzed performance by category over the course of 15 months, with the results shown in **Table 1**.

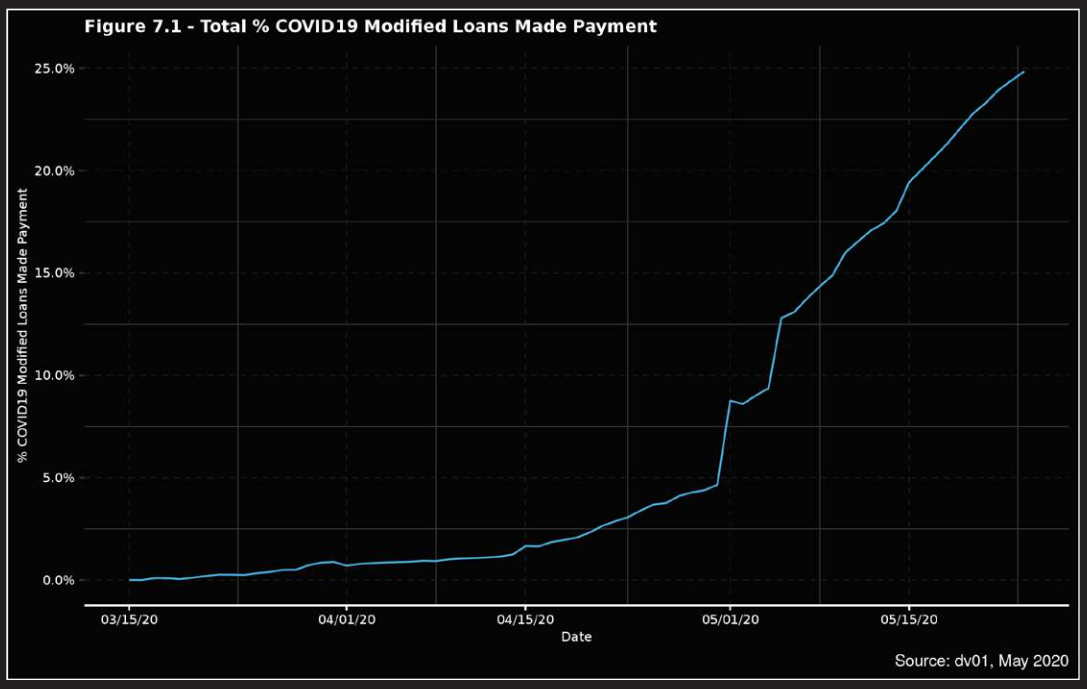
Current modified loans exhibited a 26% likelihood of negative outcomes (became delinquent or were charged off), 3x lower than loans from the earliest stage of delinquency. As a benchmark, we analyzed those same 6 categories for the same time period in the rest of the country. The hurricane region modifications had a lower negative of negative outcomes versus modifications in the rest of the country (26% vs 43%), but even the remainder of the country shows modifications have substantially better outcomes for investors.

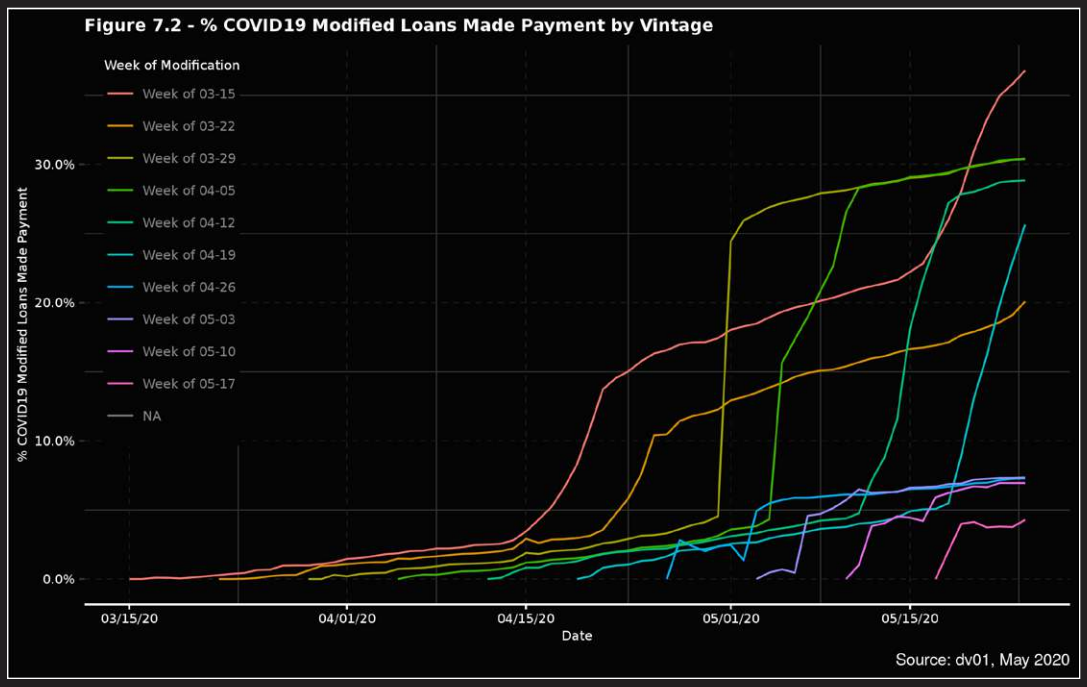
15-Month Lookahead of Loan Performance During 2017 Hurricane Season

Condition and Loan Characteristics at Beginning of Event			Loan Performance Outcome 15 Months After Event				
Region	Loan Status	Modification Status	Charged Off	Delinquent	Negative Outcome	Current	Paid Off
Hurricane Impacted	Current	Modified	18.13%	8.17%	26.30%	58.70%	15.00%
Hurricane Impacted	Current	Unmodified	4.69%	2.54%	7.23%	74.74%	18.03%
Hurricane Impacted	1 - 29 Days DQ	Unmodified	64.91%	12.28%	77.19%	18.24%	4.57%
Hurricane Impacted	30 - 59 Days DQ	Unmodified	79.60%	6.11%	85.71%	11.46%	2.83%
Hurricane Impacted	60 - 89 Days DQ	Unmodified	89.18%	4.42%	93.60%	4.81%	1.59%
Hurricane Impacted	90 - 119 Days DQ	Unmodified	93.71%	4.33%	98.03%	1.23%	0.74%
Non-Hurricane Impacted	Current	Modified	34.49%	8.72%	43.21%	47.24%	9.56%
Non-Hurricane Impacted	Current	Unmodified	4.45%	2.41%	6.87%	76.10%	17.04%
Non-Hurricane Impacted	1 - 29 Days DQ	Unmodified	62.85%	14.26%	77.11%	18.14%	4.75%
Non-Hurricane Impacted	30 - 59 Days DQ	Unmodified	80.03%	9.01%	89.04%	9.66%	1.30%
Non-Hurricane Impacted	60 - 89 Days DQ	Unmodified	88.41%	5.55%	93.96%	5.23%	0.82%
Non-Hurricane Impacted	90 - 119 Days DQ	Unmodified	91.53%	3.47%	95.00%	4.21%	0.79%

COVID-19 Modification Payment Analysis to Date

Although it is still very early in understanding the performance of COVID-19-related modifications, some of the earliest modifications have now faced at least one payment since enrolling in a hardship relief program. As discussed in our acknowledgement earlier, the prior report was somewhat overstated in modification repayment rates, which have been corrected in this report. **Figure 7.1** illustrates the percentage of all modifications where borrowers have made at least one post-modification payment, which rose from 3% at the end of April to 25% today. This is due to more loans actually facing a payment. However, because this chart includes all modifications to date (the majority of which were made after March 25th), it may be misleading. Repayment deferral programs vary in length and may include one-month programs that have the option for further extensions, which are being exercised as the COVID-19 economic malaise continues.





For a more accurate representation, **Figure 7.2** illustrates the percent of modified loans that received a payment categorized by the week the modification was made. Here we observe that up to 30%+ of all modifications made in March and early April made their first post-modification payment, despite the fact that many could have avoided doing so. More importantly, the payment percentages rose from the mid-March weeks to the weeks of March 29th, April 5th and April 12th, which as noted earlier represent the majority of all modifications.

There are multiple reasons behind the substantially increased payment percentages from the early weeks. We noted in our first report that issuers were aggressively activating or ramping up their modification efforts at the start of the COVID-19 crisis and some issuers were slightly ahead of others in implementation. By the end of March, all issuers had robust modification programs in place—which took place in a matter of weeks, as opposed to years for similar efforts during the financial crisis. Modifications starting from the week of March 29th represent a more complete picture of go-forward modifications and are more indicative of post-modification payment behavior.

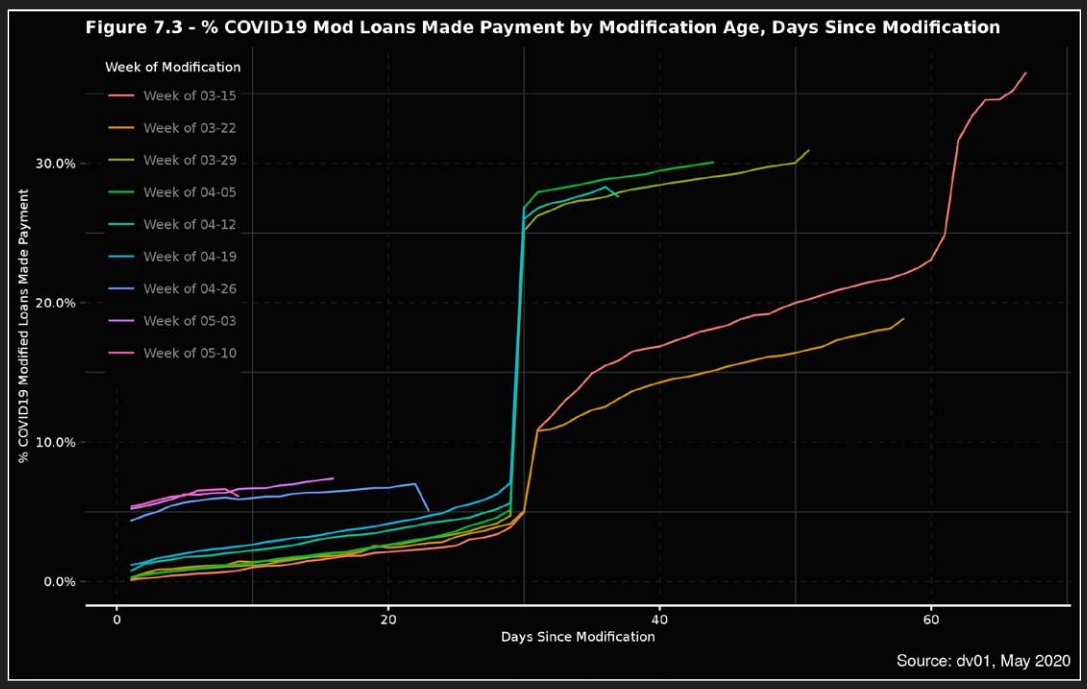
Additionally, **Figures 7.3** and **7.4**, introduced in this report, show payment behavior by the number of days since modification. As expected, payments rise substantially around 30 days after modification since that is usually when the next payment date occurs. The improvements from mid March to April modifications are more visible here, as are the initial payment trends of modifications done since mid April, where early payment rates are running substantially higher than earlier modifications.

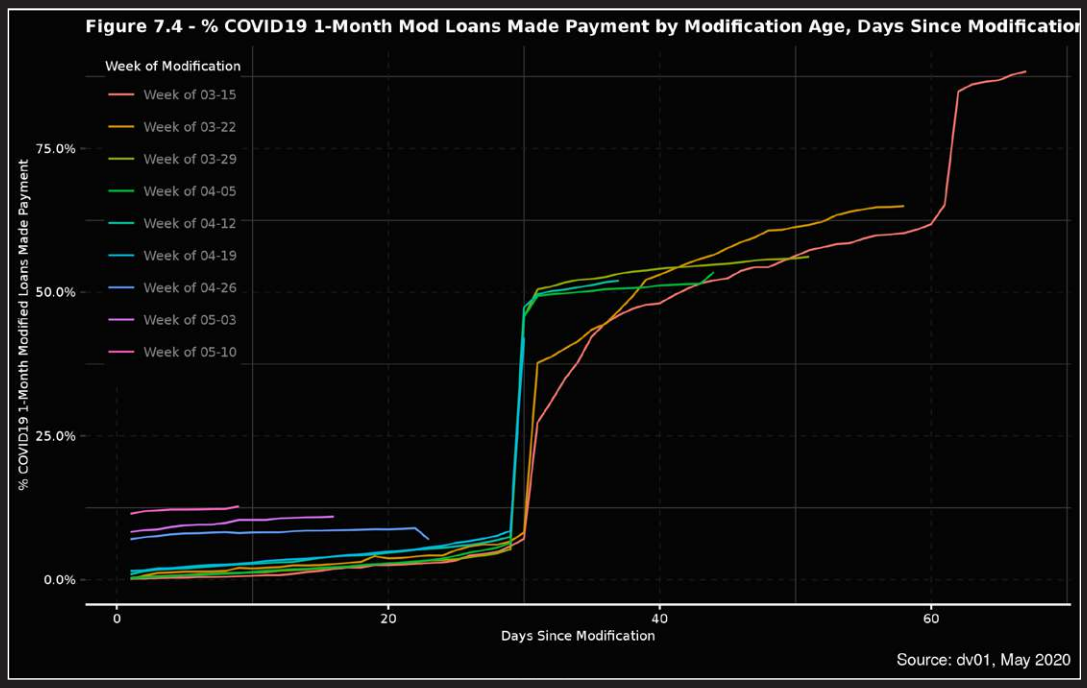
Figure 7.3 shows the behavior for all modifications regardless of length. **Figure 7.4** shows the behavior solely for one-month modifications. Unsurprisingly, with over 50% of borrowers able to resume payment, one-month modifications have the highest rates of repayment. This is critical because it's clear that modification payments aren't one-off behaviors but actually represent the majority of short term modifications, and a very positive signal for payments on the remaining universe.

Even with the caveats discussed above and the economic hardships currently in place, seeing a quarter of all modifications—and over 50% of one-month modifications—make their first payment is a positive early indicator. dv01 anticipates the payment percentages will continue to increase as two-month modifications and extended one-month modified loans approach their second payments.

"By the end of March, all issuers had robust modification programs in place—which took place in a matter of weeks, as opposed to years for similar efforts during the financial crisis."

— Vadim Verkhoglyad, CFA, Principal Analyst





Performance Analysis by Loan Geographic Region

Because the impact of COVID-19 has varied by region, dv01 segmented the universe of loans in order to isolate states with earlier and more aggressive quarantine policies. dv01 identified California and the New York tri-state area (Connecticut, New Jersey, and New York) as implementing a wider-spread quarantine effort than the remainder of the country. dv01 also identified Florida, Nevada, and Hawaii as states where tourism and leisure revenues play a larger role in state employment. Additionally, dv01 identified Alaska, Louisiana, North Dakota, Oklahoma, and Texas as having more exposure to both employment trends and economics related to oil prices. **Figure 8.1** isolates total payment impairments in these states versus the remainder of the country.

In previous reports, dv01 established that each of the regions noted above had larger increases in total payment impairment rates versus other states in the country. Florida and the tourism states in particular have shown the worst deterioration. Some positive news is that all regions have shown some decline in total payment impairments (with the exception of Nevada and Hawaii), and even the latter have shown a flattening curve.

A theme we want to highlight is that even in the areas hardest hit by COVID-19, impairments have still trended below unemployment. The tourism states, predominantly represented by Nevada loans, have a total impairment rate of around 23% versus a historical rate around 7%. The reported unemployment rate is 28.2%, up 25% (from around 3%) pre-COVID-19.[5] Even in a tourism-reliant economy, where the efforts to return are the most complicated, borrowers continue to show resilience in remaining up to date on their loans.

One of the highlights from our webinar was that, while quarantines are largely state-wide efforts, recovery should be far more granular in geography, and stakeholders should utilize the filter and stratification features of the dv01 web app for more in-depth analysis.

5 https://thenevadaindependent.com/article/nevada-posts-28-2-percent-unemployment-rate-highest-in-nation

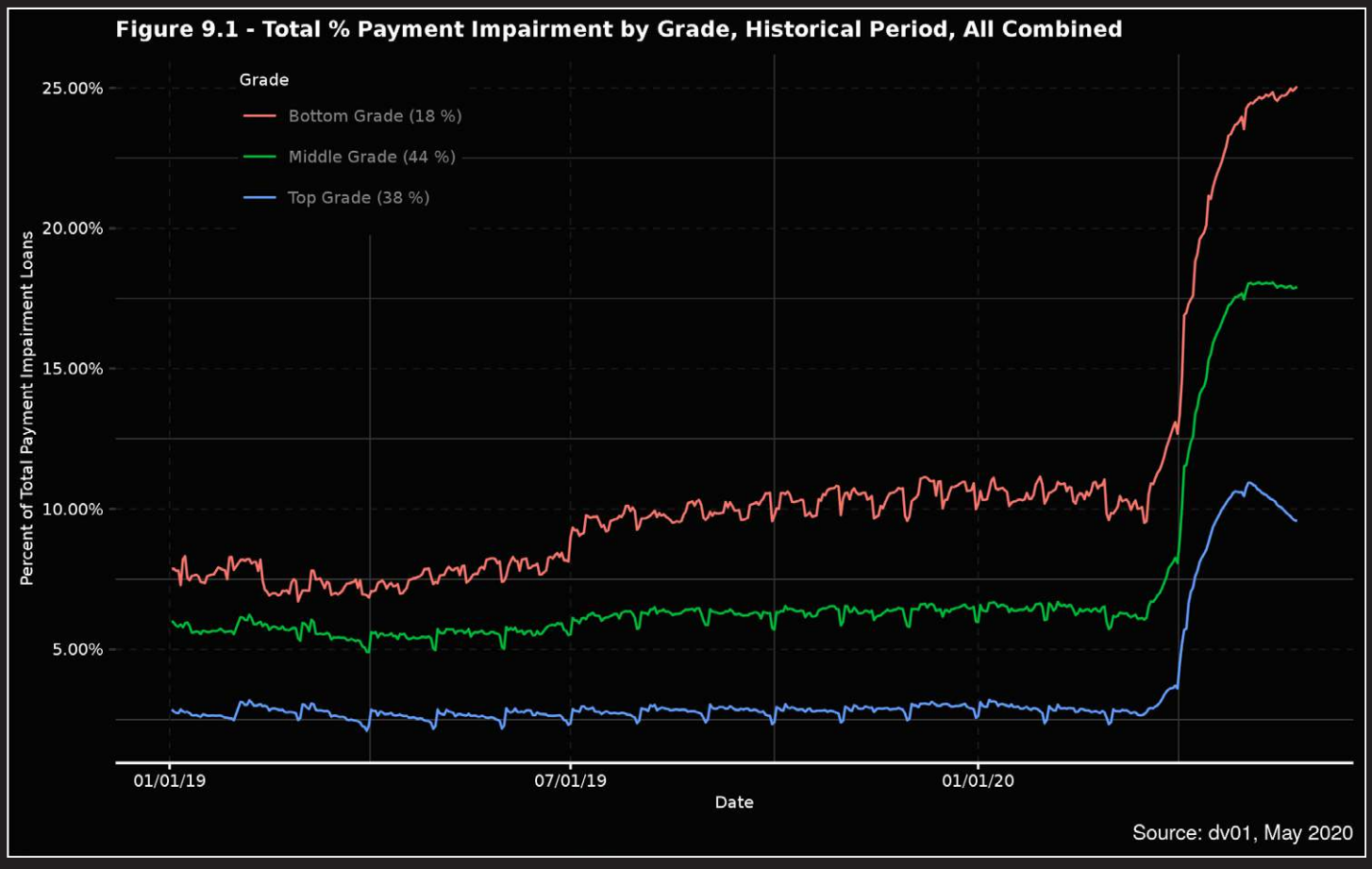
Performance Analysis by Loan Grade

dv01 stratified loans into three grade categories and shows their performance in **Figure 9.1*** below. Impairments have grown by 15% in the **Bottom Grade**, though the increase has slowed. There is a less pronounced increase in the **Middle Grade**, where there is a plateau in payment impairments. Finally, the smallest change in payment impairments and most visible subsequent decline was in the **Top Grade**. Although we are far from knowing the full economic impact of COVID-19, grade analysis shows that underwriting still plays a significant role in credit performance despite external disruptions unrelated to origination characteristics.

Issuance Volume Analysis

While performance trends have been the focal point of our reports, in this section we will cover issuance volumes for March and April. Given that new securitization has largely been silent since the onset of the pandemic, the securitization market is currently not a reasonable proxy for new loan issuance. Furthermore, new issuance volume reporting cadence varies substantially between online lenders. As a result, dv01 includes the following caveats with our new issuance discussions:

- The constituents and composition of the issuance discussion are not consistent with the remainder of the report.
    - Only platform-level information is covered in this section on issuance.
- Due to the confidential nature of underwriting standards and credit quality of our partnering issuers, dv01 cannot disclose the exact credit characteristics of March and April issuance. Users can subscribe to the dv01 Market Surveillance offering for a clearer and more complete understanding of new and existing collateral trends, along with all relevant performance information.



Despite the impact of COVID-19 already substantially visible in the month of March, issuance volume remained robust. Total issuance increased 10% year-over-year ("YoY") and over 15% month-over-month ("MoM"); the higher MoM increase can also be attributed to two additional calendar days in March. Additionally, improvements in credit quality were already noticeable in March, as WAVG FICO scores increased by six points MoM, WAVG DTI fell by over 20bps, and the percentage of total loans issued and categorized as **Top Grade** increased by 4% MoM. Additionally, dv01 noticed slight increases in WACs for **Top Grade** loans of about 10bps MoM.

As expected, April saw the full brunt of decreased issuance volume. This was largely attributable to both changes in investor demand and the continued tightening of underwriting standards from issuers. The latter point should be emphasized, as issuers are voluntarily tightening their guidelines and decreasing their future revenue to better safeguard investors and ensure origination quality meets the challenge of a difficult economic climate. Beyond the visibly improved credit characteristics described below, issuers have also introduced substantial qualitative changes to underwriting. There has been decreased focus on new applicants in favor of prioritizing existing relationships; stringent income verification and electronic payment requirements; and wholesale elimination of riskier loan offerings.

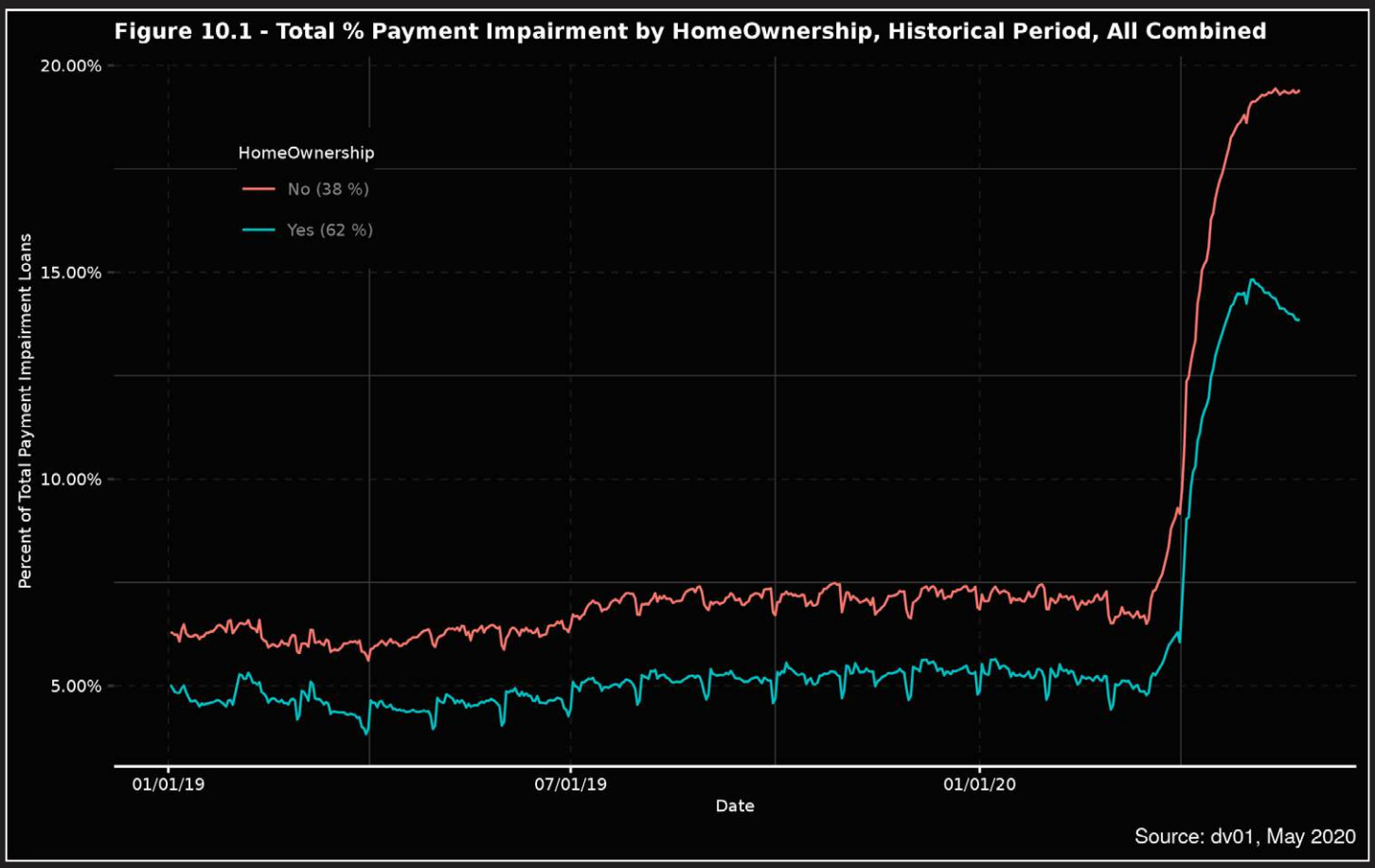
April volume fell 55-60% MoM and 60%+ YoY. Credit quality further improved in April, as WAVG FICO scores increased an additional eight points MoM (to a full 16 points above levels at the start of the year). WAVG DTI ratios fell even further, down 90bps MoM, and the percentage of loans categorized as **Top Grade** increased an additional 8% MoM to represent nearly two thirds of new issuance. Increases in loan pricing were even more evident in April, with average increase in WACs of over 50bps for **Top Grade** loans, and over 100bps for the few **Bottom Grade** loans that were issued.

The continued issuance of new loans throughout the COVID-19 pandemic nullifies another concern wary participants have expressed about the resilience of online lenders. Similar to speculation that online loans may underperform in a downturn—which dv01 has shown to be unfounded nearly two months into an economic downturn worse than that of 2008—there were theories that investors would exit en masse and issuers would be unable to originate new loans. Yet new loans continue to be made and purchased, further illustrating the viability of the marketplace issuance model.

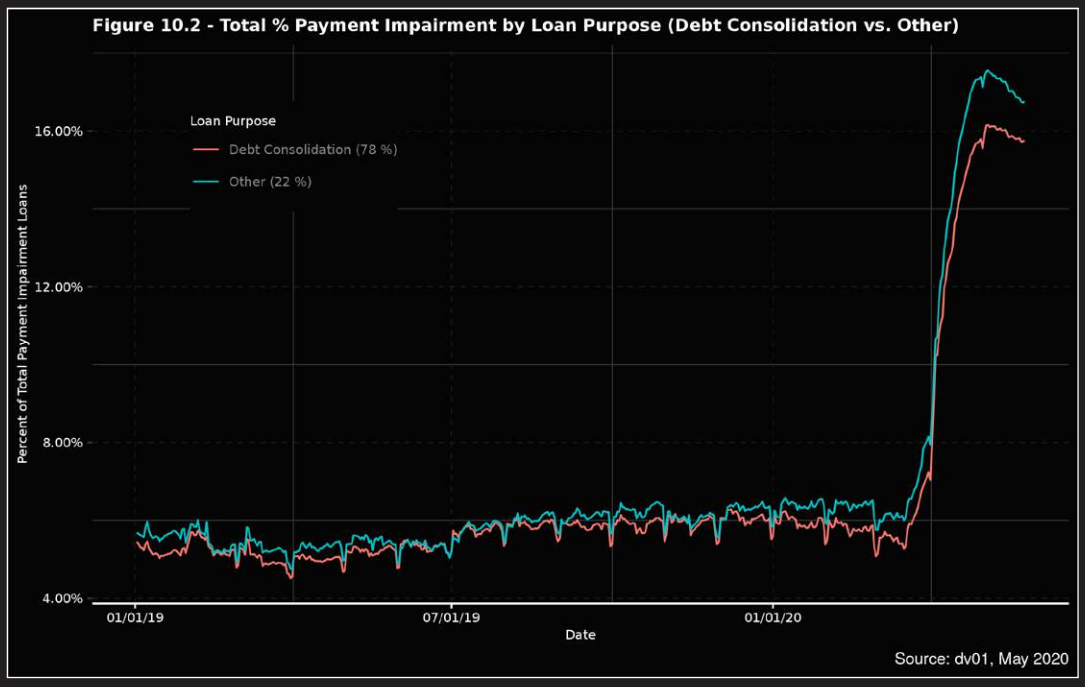
Performance Analysis by Additional Collateral Characteristics

In this report, dv01 introduces several new collateral characteristics that have shown material differences in performance. Although all the individual characteristics we have described are high level, more granular analysis (such as multiple characteristic plots or filtering) should be conducted by all stakeholders using features available in the dv01 web app. Additionally, the performance by FICO range and rate will still be found in the appendices because both factors are closely related to the loan grade section, which dv01 believes is a more holistic representation of those factors.

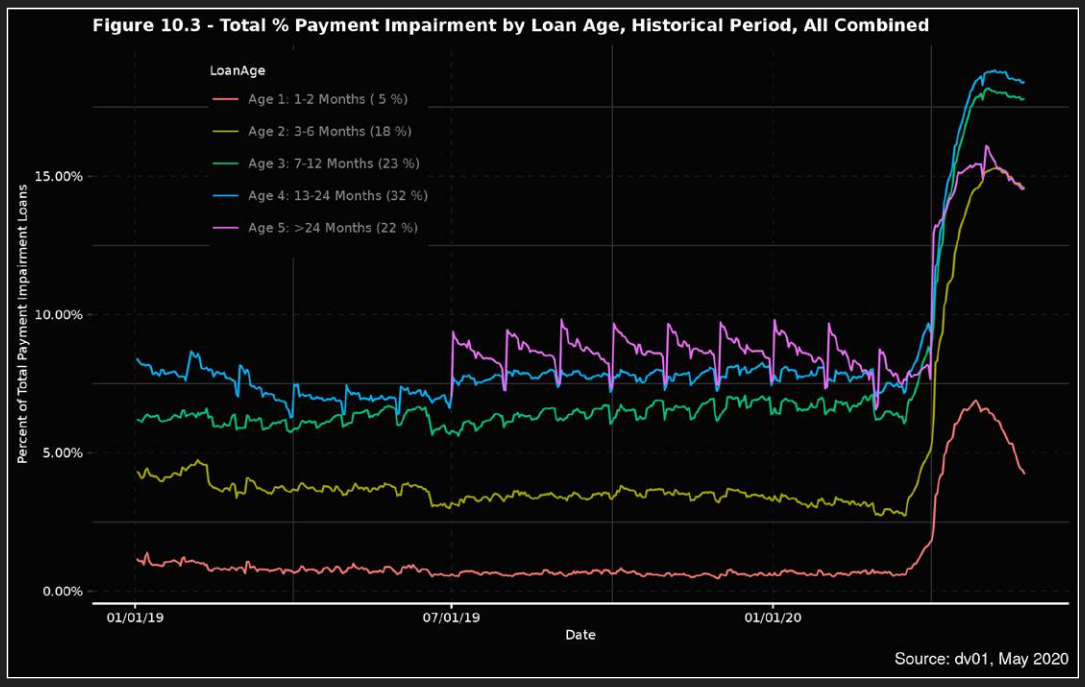
Figure 10.1 characterizes loans by the borrower's homeownership status. Performance trends continue to favor homeowners in total payment impairments and impairment declines. There are several factors that underpin these differences. First, the tenet that homeowner loans have historically performed better is one of the most critical underwriting characteristics for online lenders. Second, homeowners today are more concerned with maintaining strong credit profiles in order to refinance mortgages that take advantage of today's low rates, resulting in a stronger motivation to maintain loan payments. A more unfortunate additional fact is that nearly all mortgages are covered by the CARES act or a portfolio equivalent thereof, where servicers are offering forbearance measures similar to the online lending world for borrowers facing hardships. Renters are not similarly covered, as there is no national rent regulation and eviction stoppages are not offered in all states (nor are they being equally enforced). It is hard to ascertain how much of the performance disparity is attributable to each of these factors.



Next, dv01 reviewed performance by loan purpose, utilizing heuristics to identify all statuses linked to the refinancing of prior debt. The performance, highlighted in **Figure 10.2**, shows that payment impairment trends have narrowed to historical levels between debt consolidation and other types of loans.

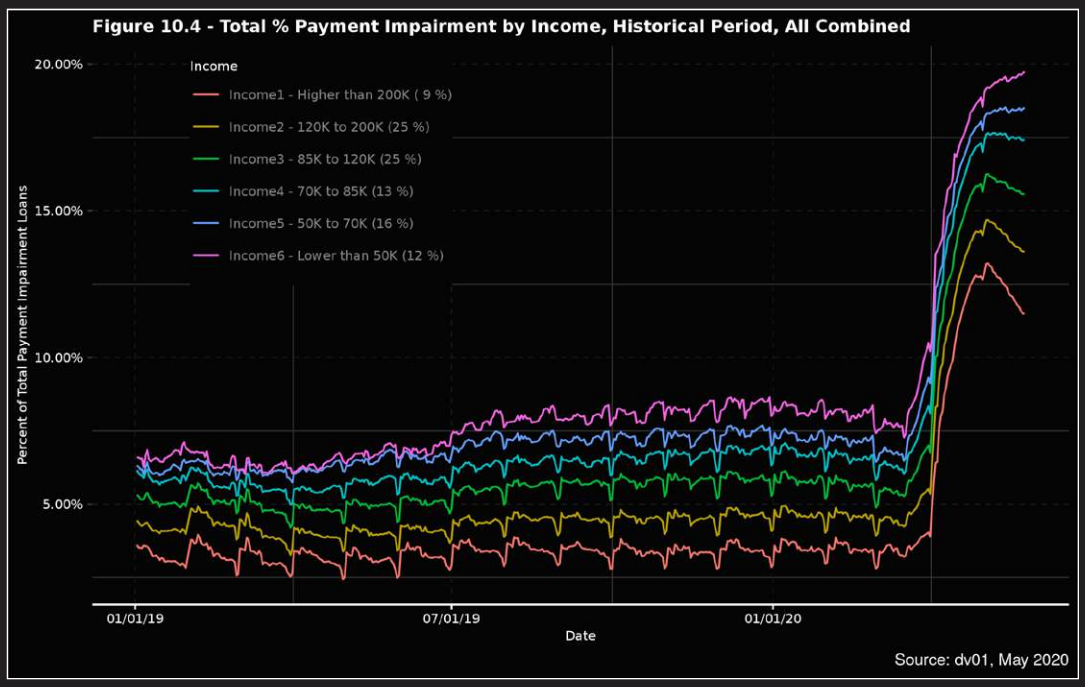


Finally, dv01 observed an interesting trend in **Figure 10.3**, which highlights total payment impairments by loan age. The best performing category is loan ages 1-2, which has a key caveat. This has always been the best performing group because it represents the newest originated loans and because of the great care taken by issuers to avoid lending to borrowers that immediately default. This trend is magnified today because the post-COVID-19 originations discussed above are much tighter in credit quality and are made to borrowers who have avoided COVID-19-related hardship.

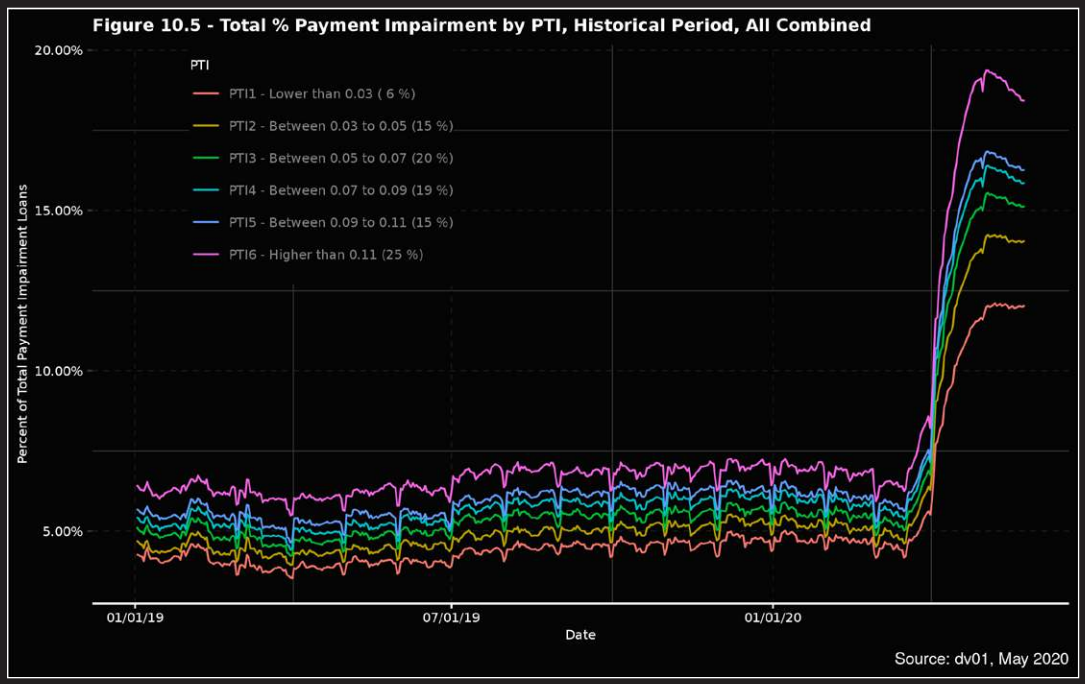


The behavior of the remaining categories are more mixed, with the largest total spike and most visible decline (and from a lower pre-COVID-19 period) coming in loan ages 3-6. As seen above, the vast majority of loans are debt consolidation, which can take months or longer. The COVID-19 pandemic significantly impeded these efforts and these loans being earliest in the process made the shock more prominent in this category. Loans ages above six months are more nuanced and they have historically higher payment impairments because borrowers successful in consolidating debts had previously been able to pay off the loan in full, or refinance into better rates, so the loans outstanding are not a complete profile. dv01 believes the loan age analysis is not rooted in underwriting practices or poor lending but an unfortunate timing circumstance impacting borrowers differently, similar to the geographic analysis discussed earlier.

Figure 10.4 shows payment trends by borrower income. Historically, higher income loans have shown lower payment impairment rates, but since COVID-19 we have noticed that all income categories have shown similar increases in total impairments. Furthermore, the deviations that we observe between the buckets become almost non-existent when we control for other credit characteristics (such as only looking at Top Grade or only homeowner loans, where higher income loans are more representative). We conclude that income has not shown a material correlation with post-COVID-19 performance when adjusted for other attributes.



The primary reason for our conclusions above, income only tells a partial story of a borrower, because it doesn't take into account their liabilities or ability to repay the debt.. A more complete measure can be found in **Figure 10.5**, showing impairments by the Payment To Income ("PTI") ratio. Performance by PTI has substantially more predictive power, with lower PTI loans showing substantially lower total impairments versus high PTI loans. Stakeholders can combine PTI analysis with Debt to Income ("DTI") and other measures such as housing payments to get a more comprehensive picture of a borrower's payment profile, which further boosts predictive ability.



Closing Remarks for Online Lending Analysis

As states engage in easing quarantine efforts, online loans have shown massive improvements throughout May, well ahead of jobless claims and the economy at large. Although substantial challenges remain, there continues to be reasons for optimism. First, major issuers have not disappeared or halted their lending operations and were able to make even higher quality loans through the most challenging times of March and April. Second, as discussed throughout all of our reports, any preconceived notions about what online loan performance might look like in a downturn have been entirely rebuked.

Not only did payment impairments reach a near-term peak (well below the 19.5% unemployment rate from April), they have decreased by almost 100bps in May, despite nearly 5M additional initial jobless claims filed through the first two weeks of May. It is clear that borrowers are using this time to continue their path to debt consolidation and improving their financial situations. Strong underwriting characteristics have played major roles in limiting total impairments and show the earliest signs of recovery. Given that most payment impairments are in modification—and judging from both our historical analysis of hurricane-related defaults and the post-COVID-19 payment behavior already observed—a substantial portion of these impaired loans will not translate into ultimate losses.

dv01 looks ahead to June, where we observe the next full month of issuance activity. Issuance was certainly lower in April; major platforms did not exit their lending practices and a portion of the decline in volume was issuers' own decision to impose even higher credit standards, sacrificing near-term revenue to better align with investors. We will also debut a prepayment analysis and further analyze how non-impaired borrowers have reacted throughout COVID-19 in managing their debt.

Non-QM Analysis

Methodology

As stated in the Introduction, the non-QM analysis contains data through April 30, 2020. All data is aggregated from available securitizations and accessible to stakeholders via the dv01 web app. For a brief overview, a non-qualified mortgage is a loan that does not meet the traditional lending standards of a qualified mortgage as set forth by the Consumer Protection Act and enforced by the Consumer Financial Protection Bureau ("CFPB"). Home loans are typically classified as non-QM if they use non-traditional methods of income verification to demonstrate a borrower's ability to repay the loan.

Non-QM loans commonly serve borrowers without traditional W-2s and tax return forms, such as self-employed borrowers, small business owners, borrowers with alternative income sources, foreign nationals, and borrowers with previous foreclosures. Additionally, non-QM loans can be used for investment homes.

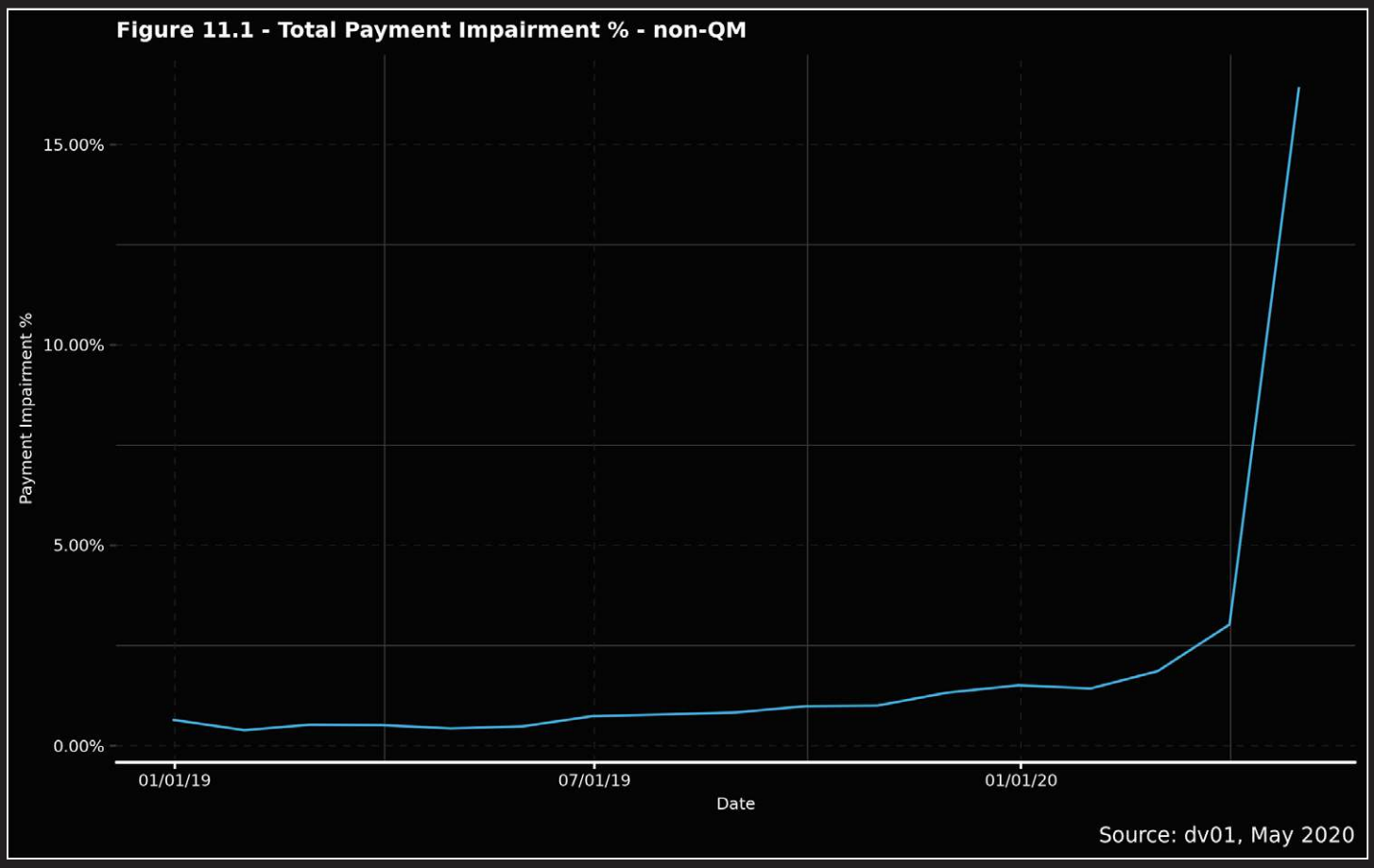
Non-QM loans should not be confused with the subprime or Alt-A loans of the mortgage crisis because they are underwritten with far more stringent requirements, require lower a LTV ratio, and higher credit scores as evidenced by loan characteristics described in the Size and Specs of Datasets section.

While there is not a section discussing payment distribution dates, dv01 consulted servicers, loan investors, and data providers to determine that a large portion of loans are typically due in the beginning of each month.

Payment Impairment Trend Analysis

Non-QM has shown the largest COVID-19-related payment impairment increase of all the asset classes covered in the report—above the increase in online loans and multiple times the change in the CRT universe. **Figure 11.1** shows that total impairments increased by 1,350 bps—or 13.5%—in April, following a 1% increase in March. Even still, the cumulative change has been slightly below the change in unemployment. That said, there is a lot to discuss about the sizable impairment change.

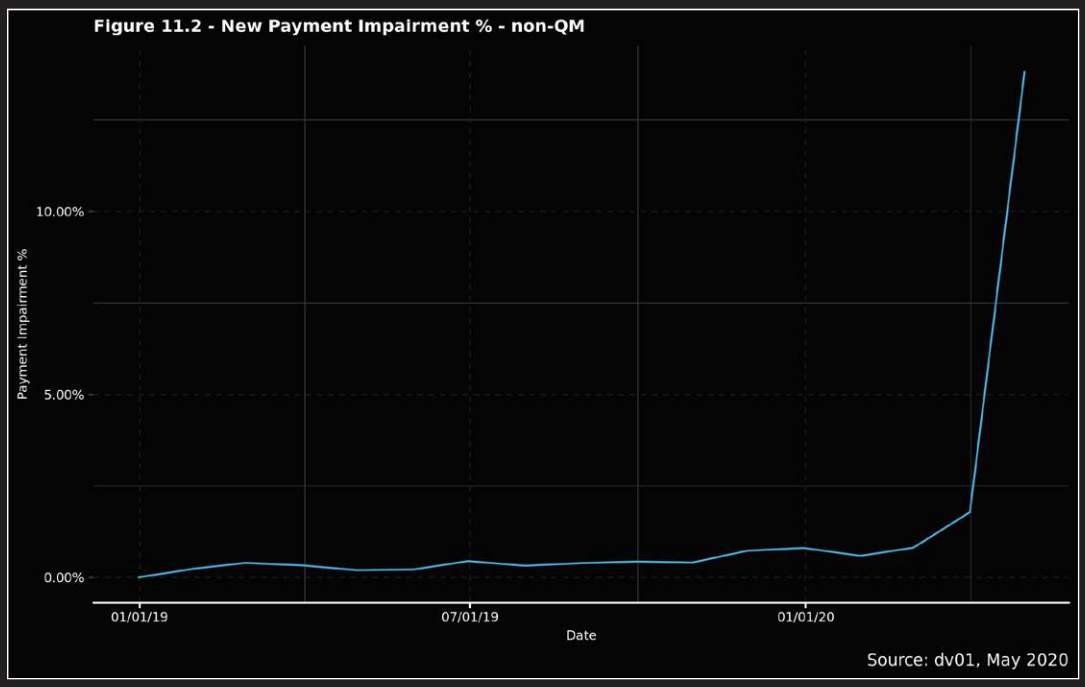
Many non-QM borrowers are self-employed or small business owners/employees. This borrower base has been among the most vulnerable groups throughout COVID-19. This segment has historically been ineligible for traditional unemployment protection, and while this was altered as part of the CARES act, claim acceptance has been slower.[1] Besides delays, these borrowers face additional hurdles in collecting and even calculating benefits.[2] Furthermore, borrowers are more likely to experience income declines that technically make them ineligible for unemployment. Unfortunately, banks have been slow to deliver SBA-backed loans, and some applicants are still unable to access loans.

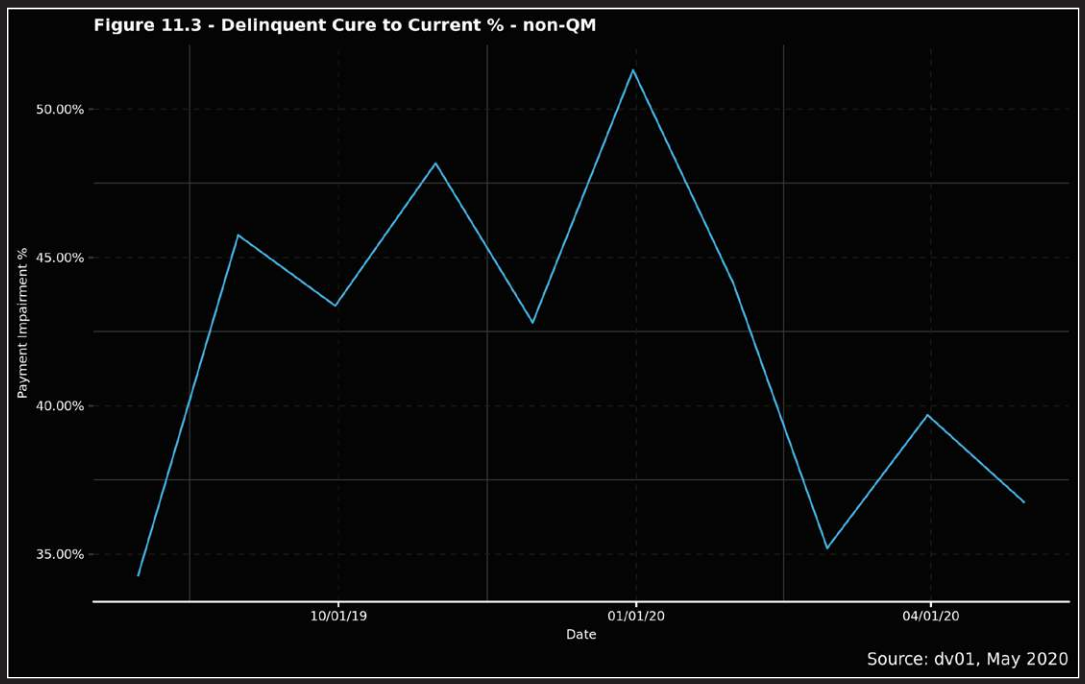


1 https://www.marketplace.org/2020/04/15/some-unemployed-dont-qualify-benefits-covid19/
2 https://www.cnbc.com/2020/05/07/unemployment-benefits-for-the-self-employed-may-be-less-than-expected.html

It is in this type of environment that market participants need transparency into loan performance in order to gain a deeper understanding of various credit characteristics. To access and leverage cleansed, validated, and normalized loan-level data, stakeholders should request issuers to onboard deals onto the dv01 platform. As shown throughout our five publications, dv01 offers unparalleled transparency across multiple credit markets, including consumer unsecured, mortgages, small business and student loans.

Figure 11.2 breaks out the newly impaired loans and **Figure 11.3** shows cures of prior delinquencies. New payment impairments increased by 14% and were offset by a 37% cure rate, which was roughly in-line with historical averages. The cure rate, especially considering the challenging environment of non-QM borrowers is impressive, especially given it in line with historical averages. It is a positive sign for potential behavior of this month's newly impaired borrowers.

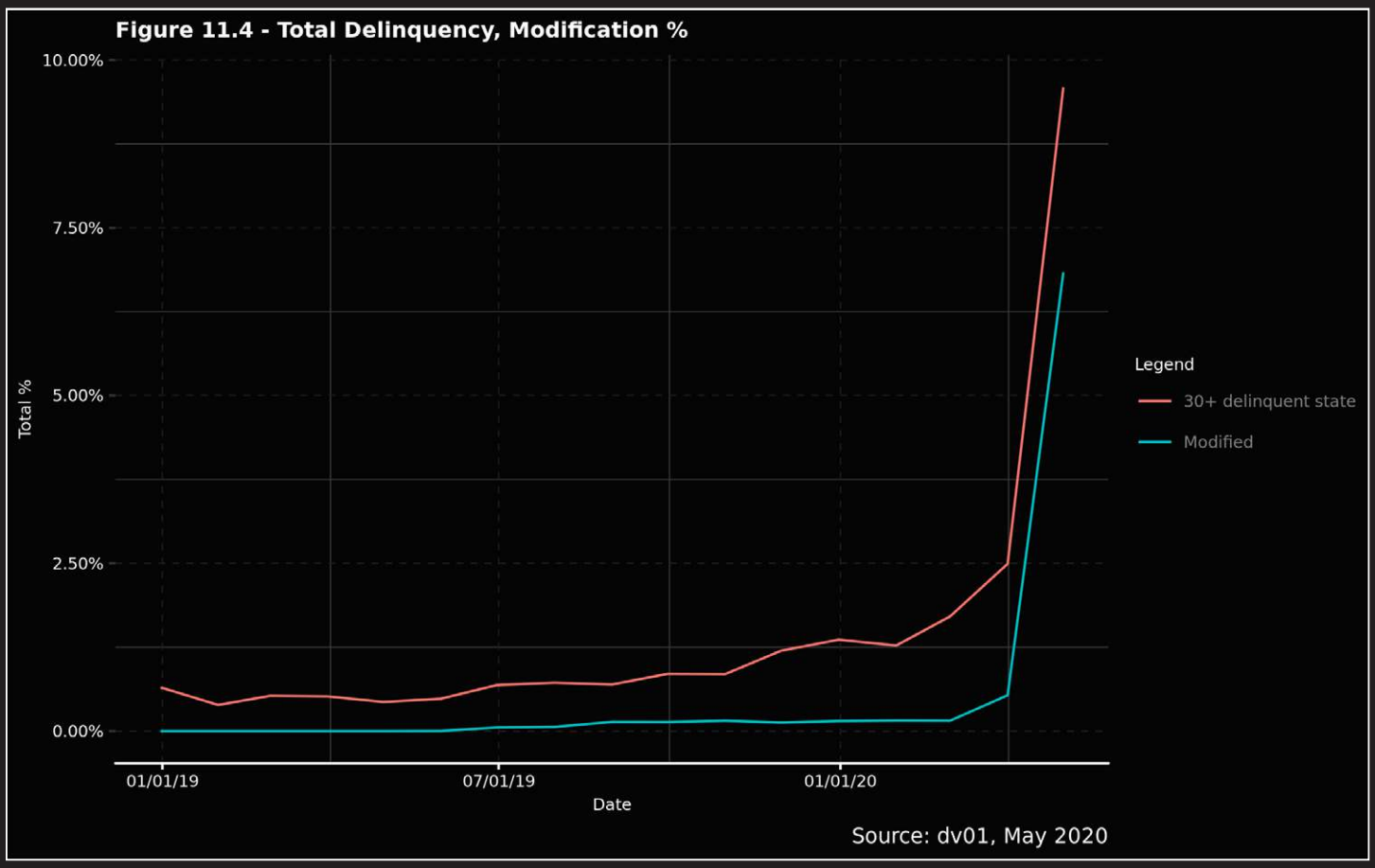




Delinquency and Modification Analysis

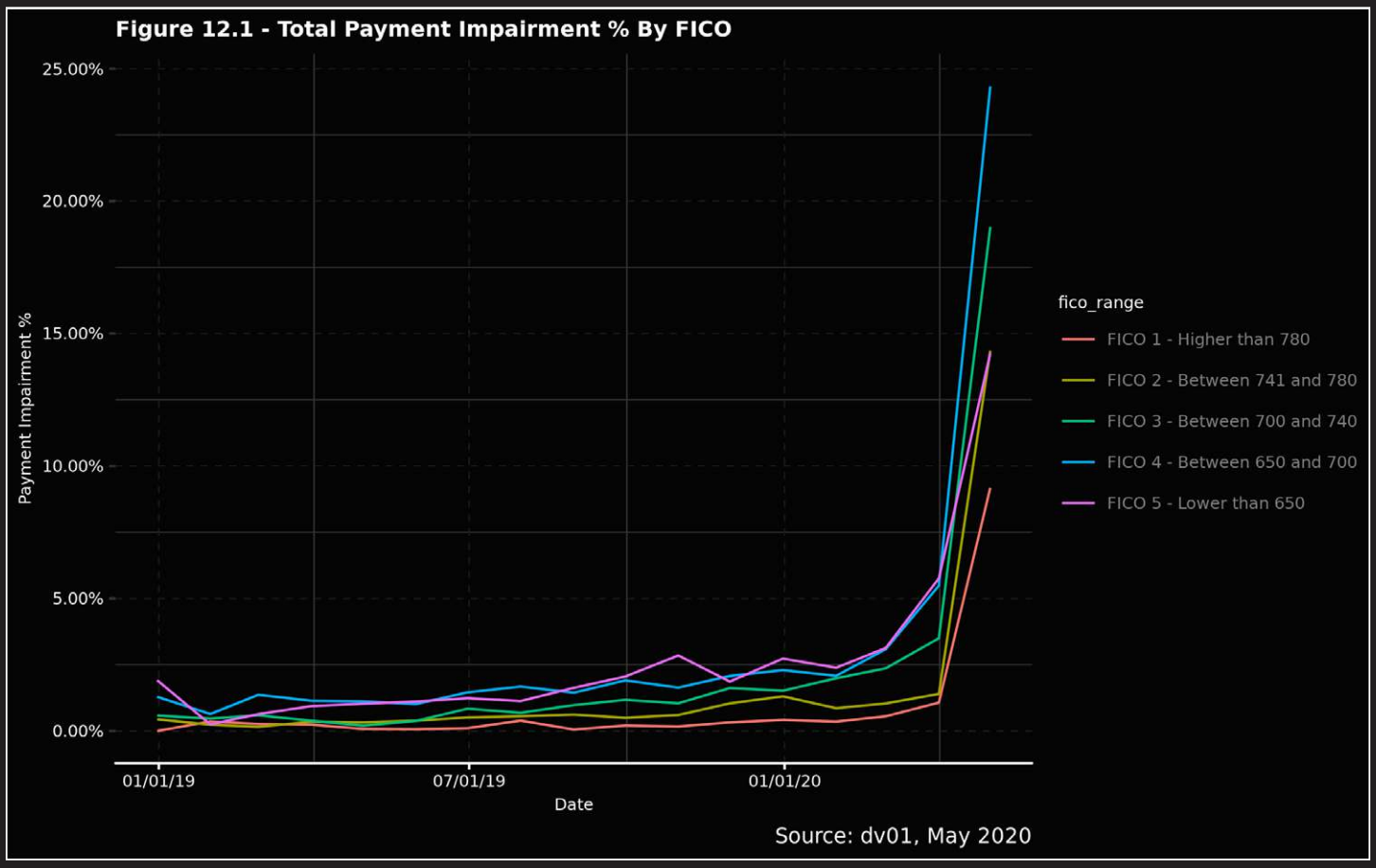
Figure 11.4 illustrates the breakdown of non-QM loan impairments that are delinquent and modified, and shows that the change was roughly split between the two. There is a necessary caveat: Many of the delinquent loans are either in a trial modification or have already been offered some form of payment relief. Because these programs are fairly new, third-party reporting has not quite caught up with the significant actions implemented by servicers and proper reporting on modification behavior has not been streamlined between data providers. Stakeholders need timely and reliable modification behavior to make dynamic decisions, which is a critical service provided by dv01.

Even with the caveat above, there's an important takeaway observed in the data. Non-QM servicers, which largely have not dealt with much in the way of delinquencies, have still ramped up modification efforts very quickly in order to alleviate borrower hardship. This is commendable, especially since modifications are much harder in the mortgage world as opposed to the online lending sector. In the 2008 crisis, modifications started in earnest nearly 2 years after delinquencies began to rise, as opposed to the one month this time around.

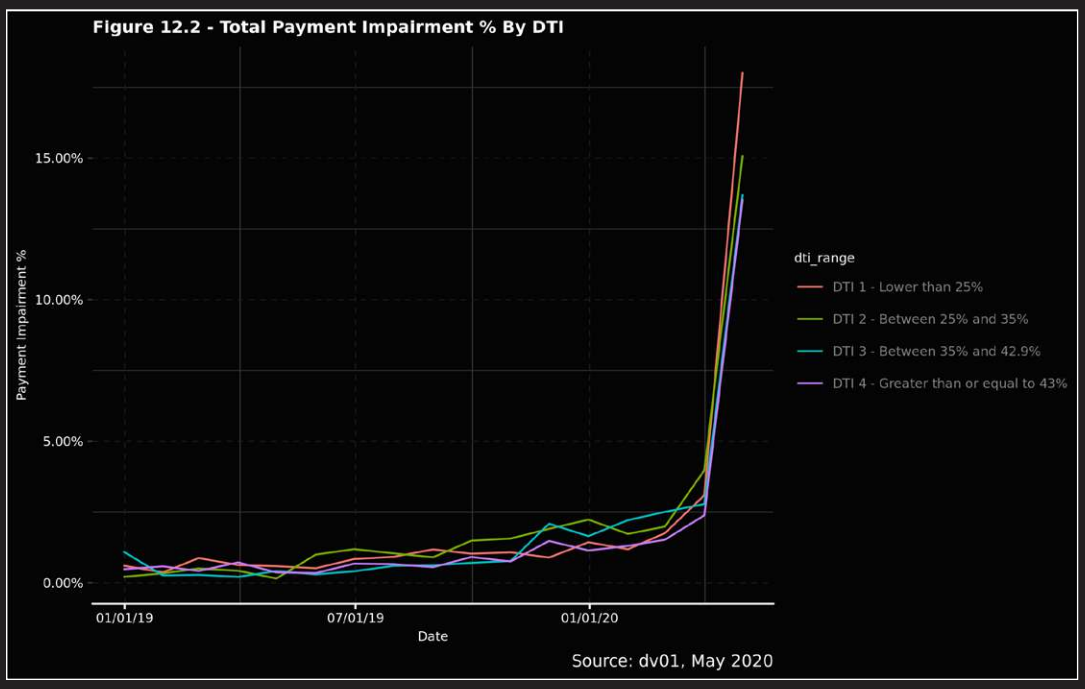


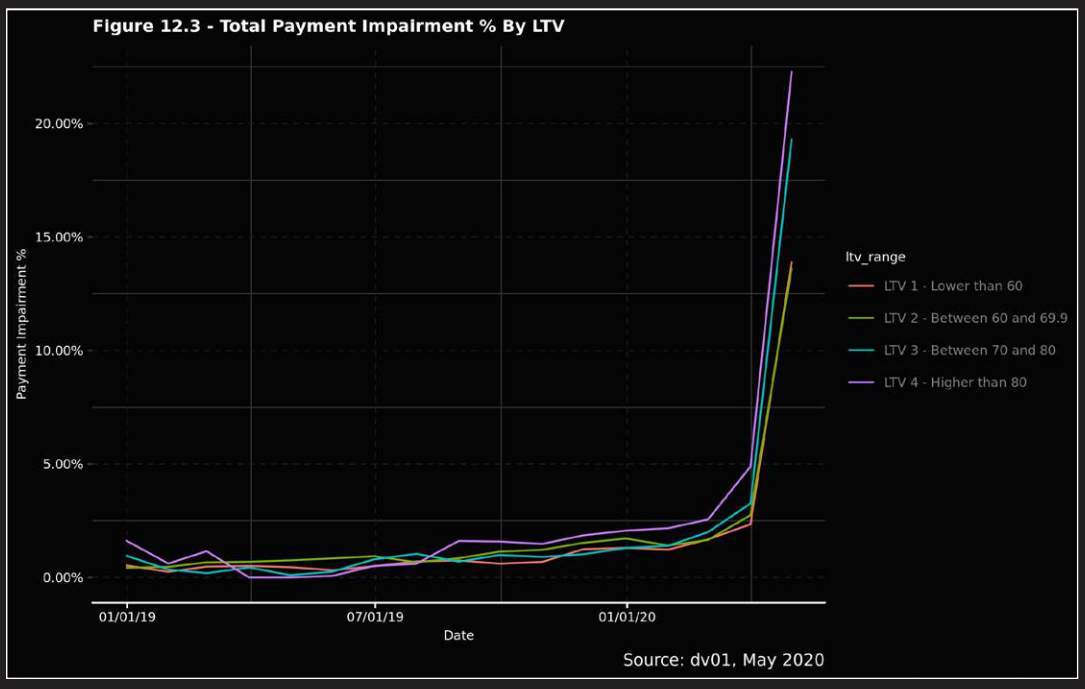
Performance by Collateral Characteristics

Credit score is an important performance as illustrated in **Figure 12.1**. Impaired loans with 650-700 credit scores rose at nearly double the rate of the universe with credit scores above 740. Clearly strained borrowers will continue to maintain their credit standing, especially to the extent they can possibly refinance into a more traditional loan to take advantage of lower rates. That said, even the highest FICO band faced significant strains; understanding more attributes is required for a more complete picture of performance.



Other traditional characteristics have shown less predictive behavior within performance. **Figure 12.2** illustrates performance by DTIs and **Figure 12.4** by geographic region. Both show little performance differentiation between the different categories. There is some logic here, because self-employed borrowers' incomes have been severely impacted, regardless of what DTI at origination was. Furthermore, every state's quarantine efforts, regardless of how severe, have been harsh on the self-employed universe. Finally, **Figure 12.3** shows some deviation between different LTVs, but not as significant as other attributes (especially given higher LTV loans may have offsetting characteristics like higher credit scores).

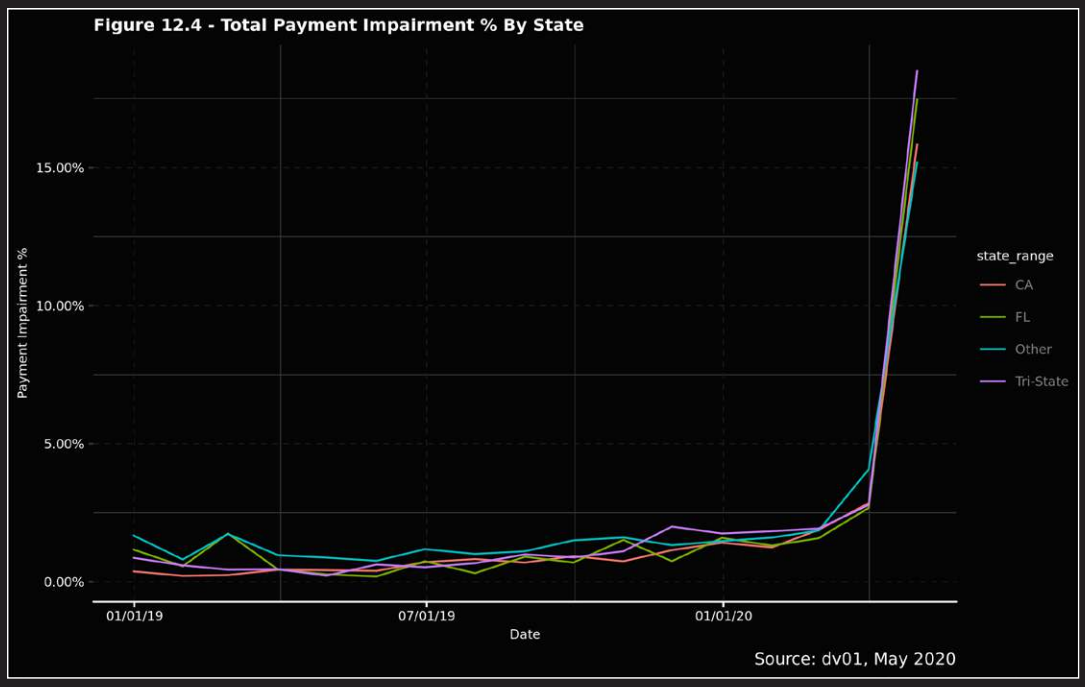


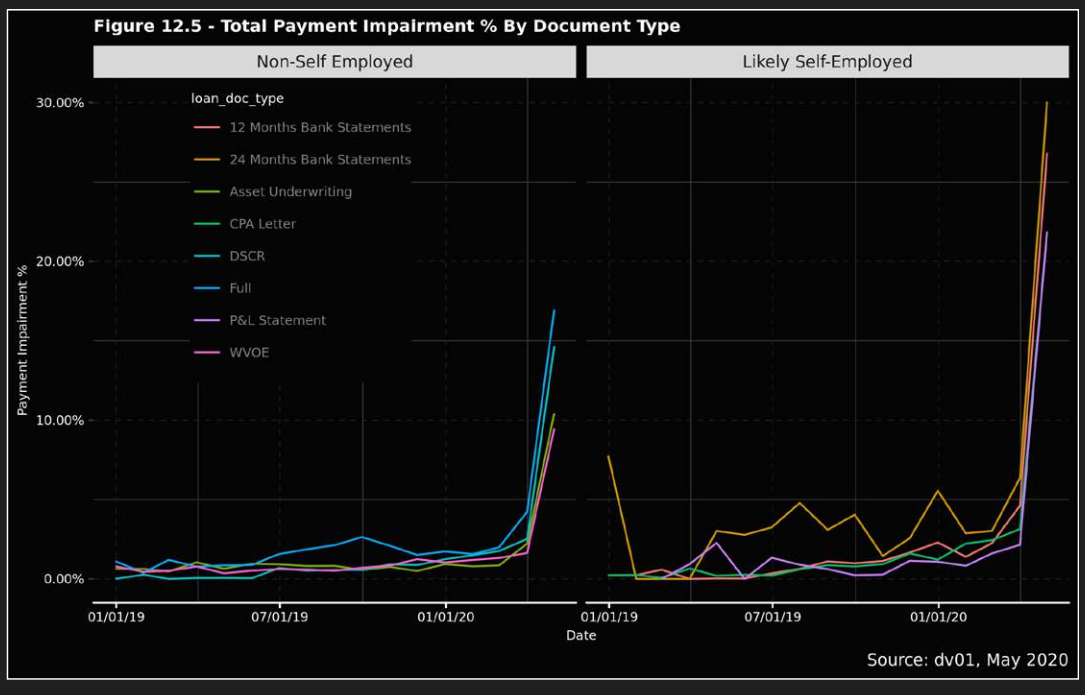


While there has been little performance deviation within a category's cohorts, the most significant is observed by income documentation type, as illustrated in **Figure 12.5**. Income documentation type is one of the more challenging aspects of non-QM to normalize across issuers, and it is an area dv01 dedicates substantial resources to standardizing. A full white paper (which can be accessed here) explains the challenge of understanding and comparing documentation within the post-crisis non-QM universe.

Clearly the largest increases have occurred among the self-employed loans, where impairments are reaching up to 30%. Conversely, the strongest performance has been in Written Verification of Employment ("WVOE") loans, an indicator of traditional employment, and Asset Underwriting loans, which are offered to borrowers with limited income but larger asset holdings (such as retirees). Critically, these are only the broad categories easily sortable across securitizations. Drilling into the multitude of issuer-provided documentation types—of which there are over 60—will allow stakeholders even further understanding of documentation types and performance. All of this has been standardized by dv01.

> *"Clearly the largest increases have occurred among the self-employed loans, where impairments are reaching up to 30%."*
>
> *— Wei Wu, Ph.D., CFA, Principal Data Scientist*

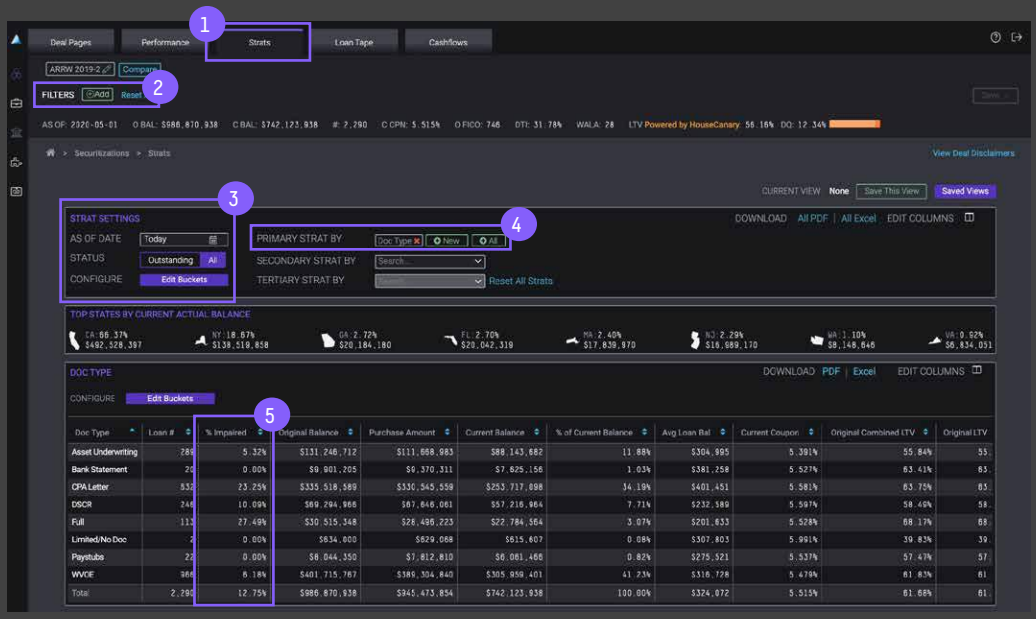




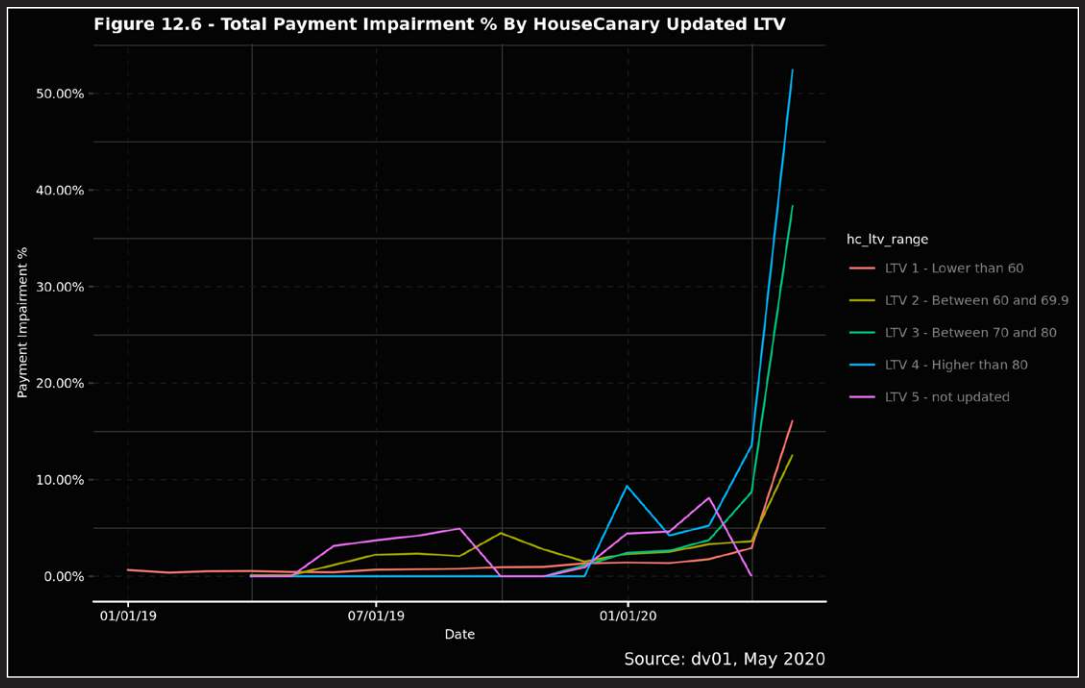
Although the original LTV, as discussed earlier, does not show substantial differentiation between categories, using an updated LTV tells a far more impactful story. We can reliably estimate a change in LTV over time to get a clearer picture of a borrower's current equity in their home. An updated LTV takes into account principal paydowns through amortization and partial prepayments, as well as changes in home prices over time. For the latter, dv01 has partnered with HouseCanary, the leading provider of accurate and up-to-date estimates for home price values, to determine changes in property prices over time.

As we observe in Figure 12.6, updated LTV makes a major difference in performance trends with loans over 70 LTV having multiple times higher impairments than those below 70. The combination of slow or negative home price changes, which are rare in the US over the past few years, coupled with a lack of paydowns is a powerful driver of forward-looking performance. This was heavily proven through the financial crisis and continues today. Stakeholders must incorporate both to understand borrower behavior to date and forecast their behavior going forward.

How to Analyze by Doc Type on the Dv01 App



1. The `Strats` page (shown here on its own tab within dv01's `Securitization` product line) displays an array of stratification tables for the selected deal.
2. Select from a menu of attributes by which you can filter your dataset.
3. On the Settings card, you can specify an `As Of Date`, toggle `Status`, and `Edit Buckets`.
4. By default, dv01 displays a set of editable primary strat tables (shown here is a single strat, `Doc Type`), as well as two additional levels of detail breakdown (secondary and tertiary stratification).
5. `Edit Columns` allows you to hide, display, and reorder columns in the strat table (such as `% Impaired`).



Prepayment Analysis

Even as impairments soared in April, there were still substantial numbers of borrowers who were able to prepay their loans and take advantage of lower rates, as covered in **Figure 13.1**. dv01 observed a substantial decline in annual prepayment rates—commonly called Conditional Prepayment Rate ("CPR")—by about 500 bps (5%) MoM. While small, this number is still impressive given the challenging environment of tighter credit underwriting, the fact that virtually no new non-QM loans were originated, and the reduced capacity of mortgage originators in April. Unfortunately, the prepayment rate observed in April does not contain sufficient loan count to be able to reliably categorize performance by different collateral attributes.

CRT Analysis

As stated in the Introduction, the CRT analysis is composed entirely of STACR securitizations, which are loans guaranteed by Freddie Mac, and contains data from January 2015 through April 30, 2020. The reason for the larger reporting window is because CRT has sufficient data to report over multiple years, whereas the non-QM market was largely non-existent prior to late 2017. In this section, dv01 offers insights into overall market trends and dives into specific performance metrics on different strats and characteristics. All data is aggregated from available securitizations and accessible to stakeholders via the dv01 web app.

For a brief overview, CRT securities were created in 2013 to enable the transfer of a portion of credit losses within agency pools to private investors. These securities are not guaranteed by government-sponsored enterprises (GSE); therefore, losses are borne by the participating investors. There are two types of CRT deals: fixed-loss and actual-loss securitizations. In fixed-loss securitizations, delinquent loans are removed from the securitization after 180 days (with some exceptions) and investors bear losses on those loans at a fixed severity. In actual-loss deals, loans stay in securitizations until completion of the foreclosure process, or some alternate thereof, and investors bear the actual losses (if any) on loans upon disposition of the home. Fixed-loss deals were no longer issued after 2015 and every deal thereafter has been an actual-loss securitization.

The credit characteristics discussed in the CRT section are similar to those discussed above in non-QM. However, given the substantially larger reporting universe and different collateral composition, some charts have been expanded to include further loan breakdowns. For instance, non-QM has very few loans originated with LTV ratios above 80% due to the substantial costs and very strict underwriting for high LTV loans. However, in CRT this is a more normal occurrence, so we were able to dissect the category into narrower buckets. Likewise, there are few loans in non-QM with DTI ratios above 43% because these loans would largely run afoul of the Ability to Repay (ATR) rule created by the CFPB. However, due to the GSE patch of 2017, this universe does exist in CRT.

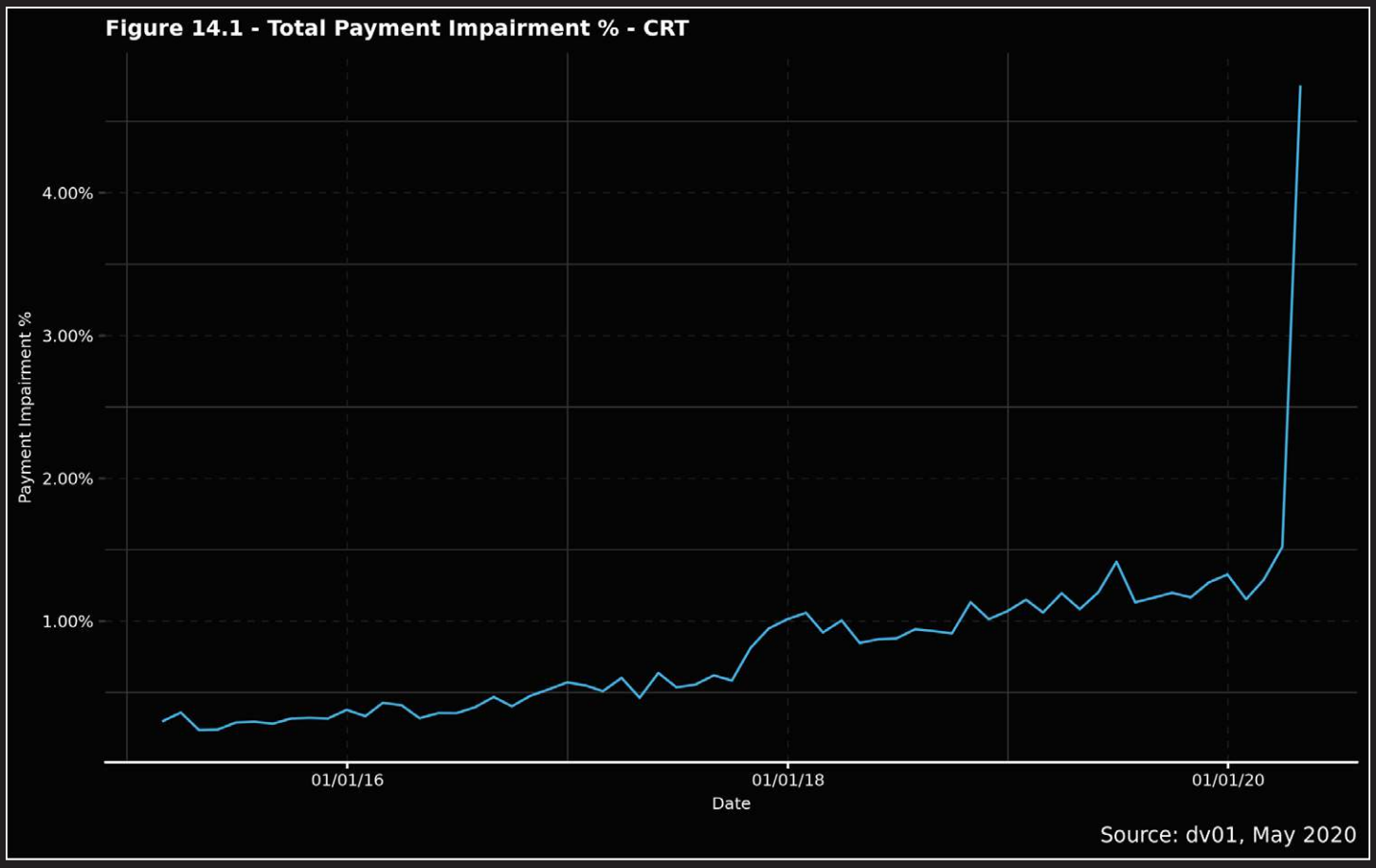
Payment Impairment Trend Analysis

As seen in **Figure 14.1**, total impairments in April increased by 3.3% in April, following a 0.30% increase in March. This cumulative 3.6% increase is roughly one-fifth the change in unemployment observed from February through April, and well below the 10% change in online lending impairments. This is a far cry from the consumer and mortgage led negative trends observed after the 2008 crisis.

With that in mind, the impairment increase is substantial relative to the credit enhancement of CRT tranches. Credit enhancement on investment-grade bonds can be as low as 2.5%, so continued payment impairments could create significant performance pressure and will require a more thorough understanding of the collateral characteristics, trends, and forecasting abilities offered by dv01 for the entire CRT universe.

"With that in mind, the impairment increase is substantial relative to the credit enhancement of CRT tranches. Credit enhancement on investment-grade bonds can be as low as 2.5%, so continued payment impairments could create significant performance pressure and will require a more thorough understanding of the collateral characteristics, trends, and forecasting abilities offered by dv01 for the entire CRT universe."

— Vadim Verkhoglyad, CFA, Principal Analyst



Similar to the non-QM analysis, we broke down the change in payment impairments into new payment impairments, as seen in **Figure 14.2**, versus cures of prior delinquencies, as seen in **Figure 14.3**. New payment impairments increased by 0.4% and were offset by a 30% cure of prior delinquencies to current status, which was roughly in-line with historical averages. The latter behavior is important to note. April was likely the most difficult economic month the US has faced since prior to World War II, yet delinquent borrowers are still making tremendous efforts to pay their mortgages.

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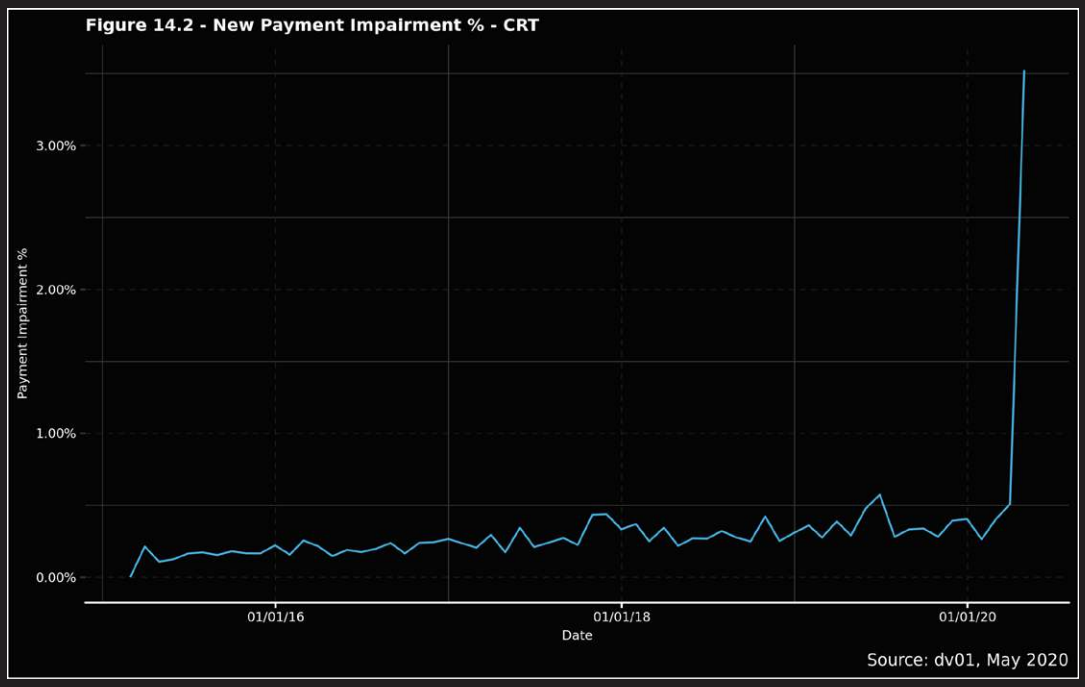
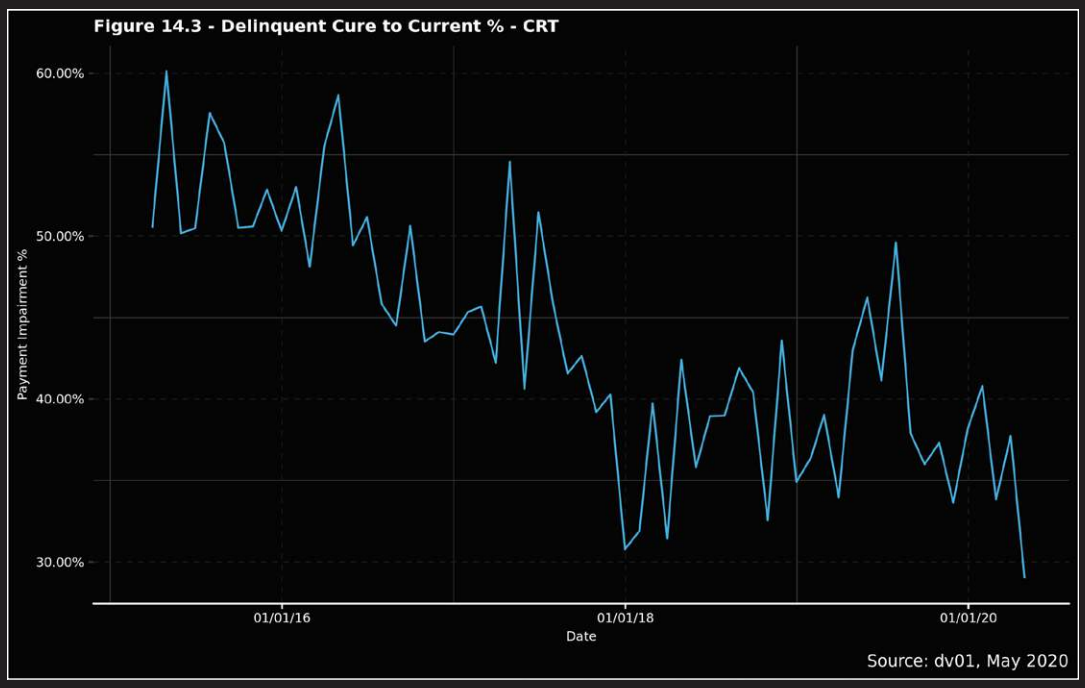
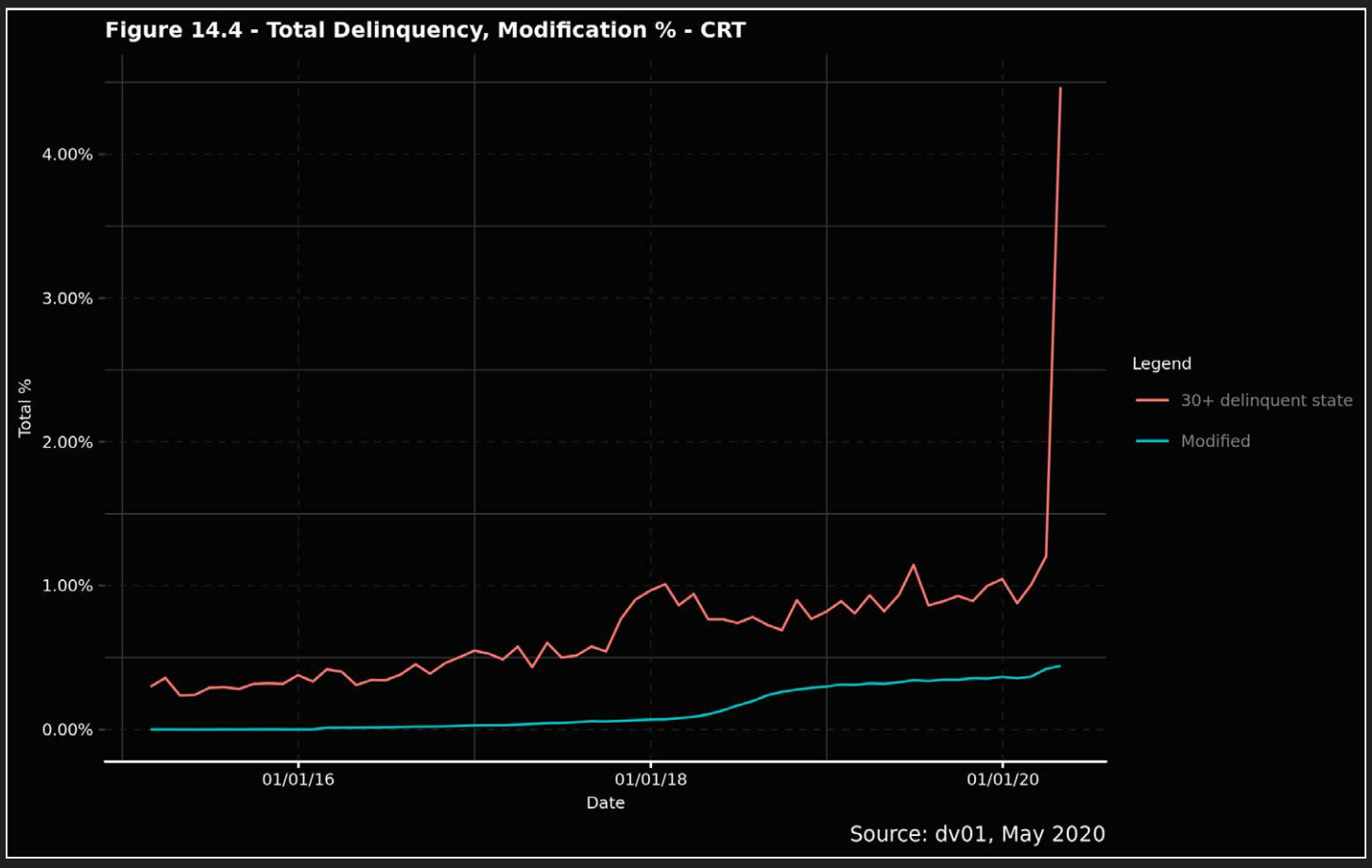




Delinquency and Modification Analysis

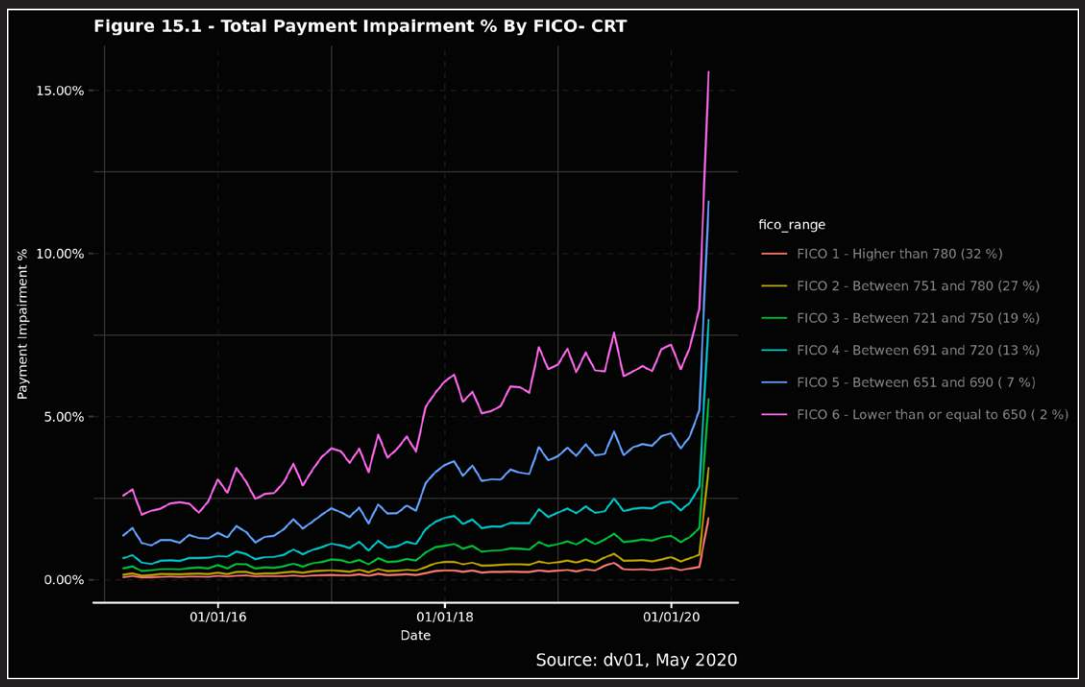
Figure 14.4 shows the breakdown of CRT loan impairments that are delinquent and modified. This chart would indicate that modifications are non-existent and all loans are simply going to delinquency. However, dv01 believes this is misleading and is a reflection of incomplete third-party data and a perfect example of the necessity of dv01's reporting and data validation process. Both GSEs have payment deferral programs in place to allow borrowers to defer payments due to economic hardships for up to 12 months. The agencies are still reporting an increase in days past due on the loans, but have established new indicators showing whether delinquent loans are in a COVID-19-related deferral flag (which is the same as the modifications described in the online lending and non-QM sections). As of now, this new concept field has not been consistently populated by third-party data providers; once it becomes more visible, stakeholders will see that a substantial majority of delinquencies are in one of these statuses.

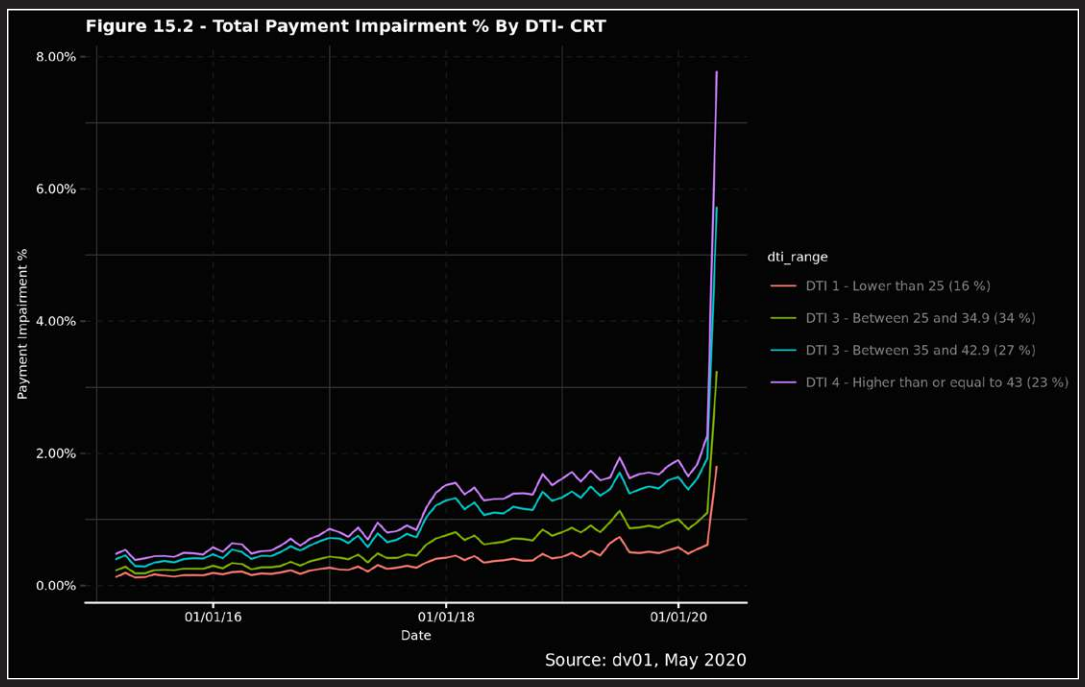


Performance by Collateral Characteristics

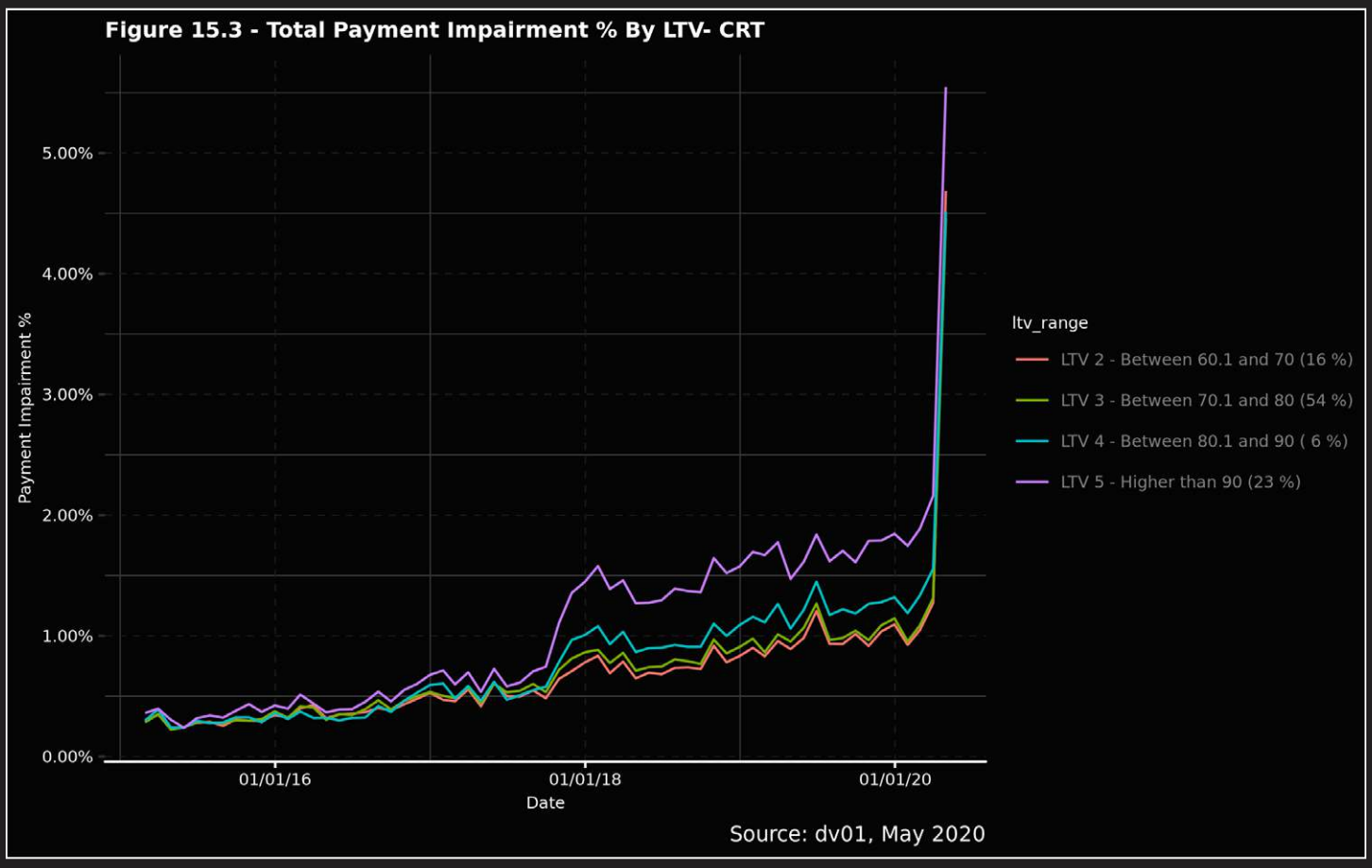
Credit score remains among the most important drivers of performance, as illustrated in **Figure 15.1**. Loans with FICO scores above 750 registered a ~2% or lower increase in payment impairments while loans below 690 increased by over 7%. This is a consistent theme observed across consumer credit products since the start of COVID-19 performance trends and indicates borrowers' dedication to maintaining strong credit profiles.

A similarly wide performance gap can be observed in performance by DTIs, as seen in **Figure 15.2**. As discussed earlier, higher DTI loans are much more visible in CRT than non-QM and the difference in performance is substantial, almost the same as observed by FICO scores. Loans with DTIs above 43% saw a 6% impairment increase versus only a 1% change in loans with DTIs below 25%. This trend is a reflection of the higher debt burden that high DTI loans face as a portion of income, making them more vulnerable to employment or income changes.





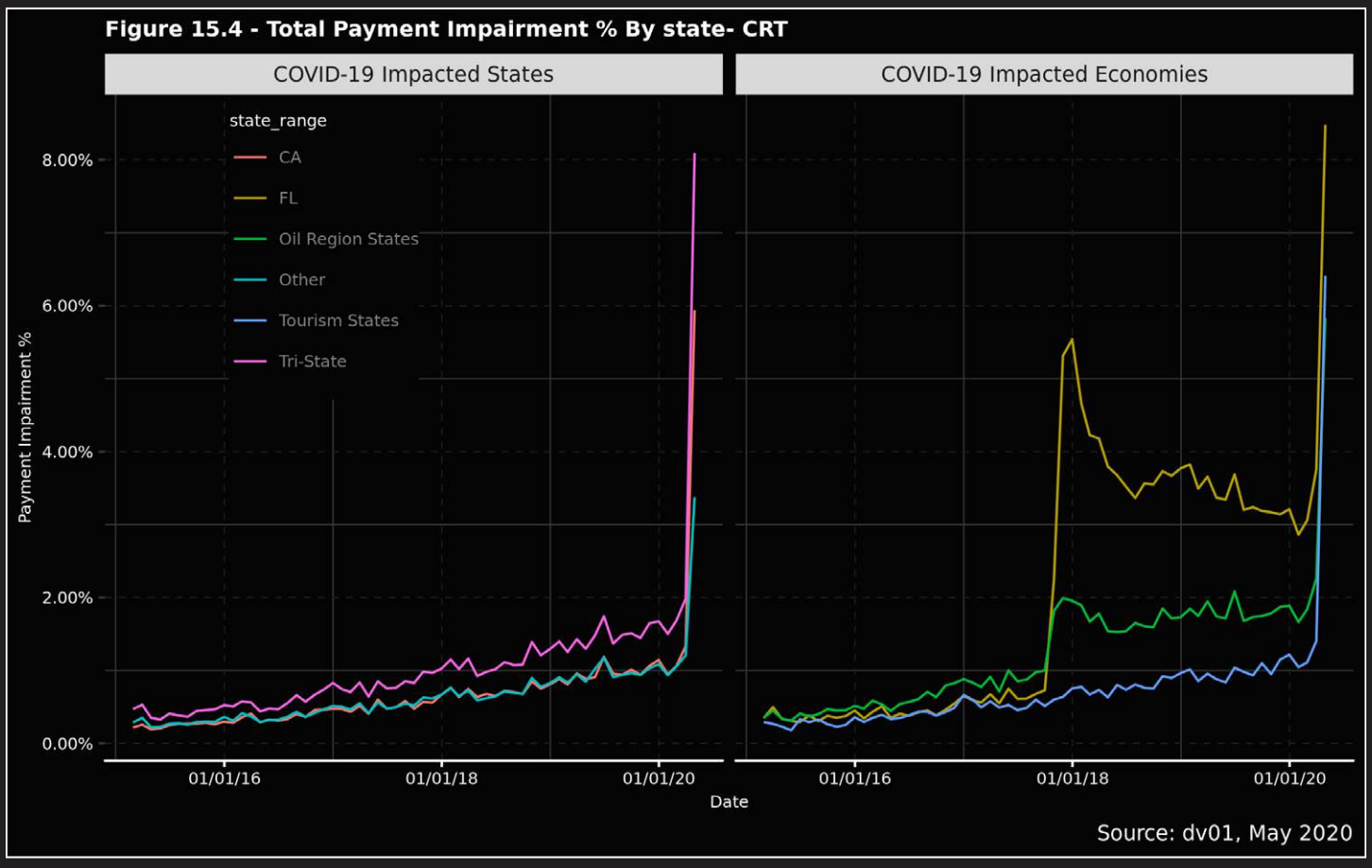
Interestingly, the performance by LTV, as seen in **Figure 15.3**, does not adhere to the same trends of FICO or DTI. All LTV bands have shown similar rates of increase during COVID-19. The reasoning behind this has to do with attribute layering. Underwriting for loans with LTV above 80 is more stringent, with higher FICO and lower DTI requirements. So there are offsetting factors when observing loans with high LTV, which may be a driver of convergence in performance. Furthermore, LTV became a major driver of performance after 2008, when home prices dropped substantially and borrowers with negative equity in their homes simply gave up paying. Conversely, home prices have been very strong over the past few years for many reasons and even borrowers above 90% LTVs have substantially better LTVs today due to amortization and home price appreciation.



Performance Analysis by Loan Geographic Region

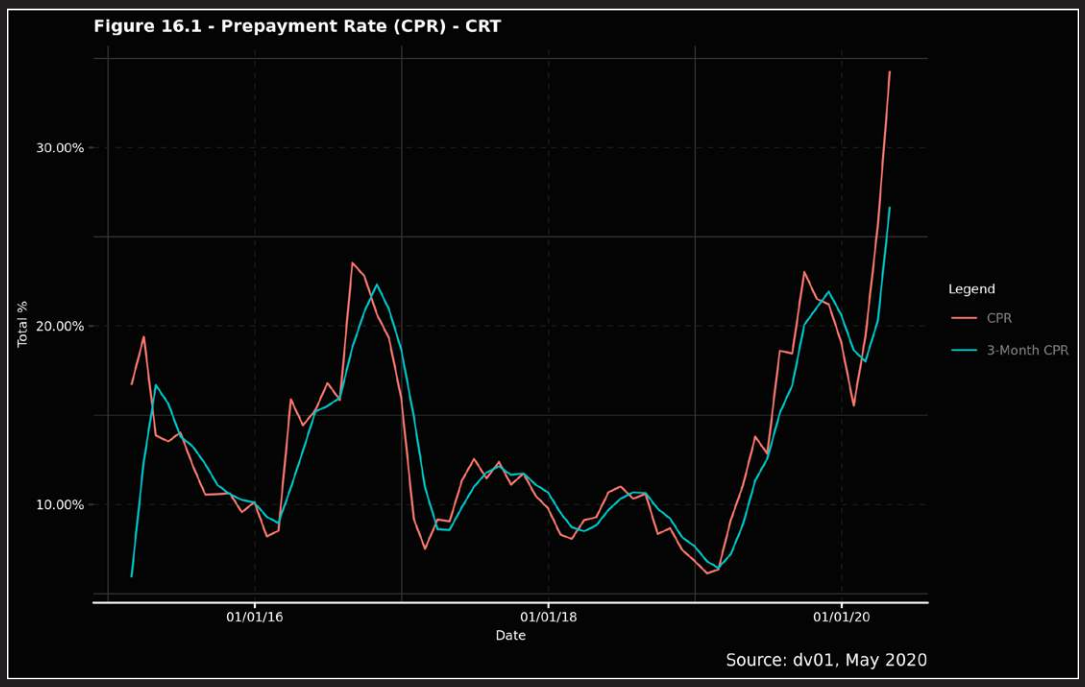
Figure 15.4 shares a few conclusions on impairments by state. First, Florida delinquency rates remained elevated relative to other states due to the legacy impact of the 2017 hurricane season, along with some impact from Hurricane Florence in 2018 and Hurricane Dorian in 2019.

Second, we see a different picture when compared to the performance of the online lending and non-QM sectors. The New York tri-state area leads the way in both total payment impairments and impairment increases. California has among the highest increases in impairments, almost mirroring the change in tourism states. One of the major reasons is due to the average loan balances seen for New York Tri-State area and California loans. California loans have an average balance of $297,000 in the STACR universe, and the Tri-State area an average balance of $244,000. A substantial portion of all mortgages in these regions exceed the maximum balance limit allowed by GSEs, and the smaller balances represent regions with lower home values and incomes. Additionally, loans on condos and co-ops are barely existent in the GSE universe, but they make up a substantial portion of housing in the New York tri-state area.



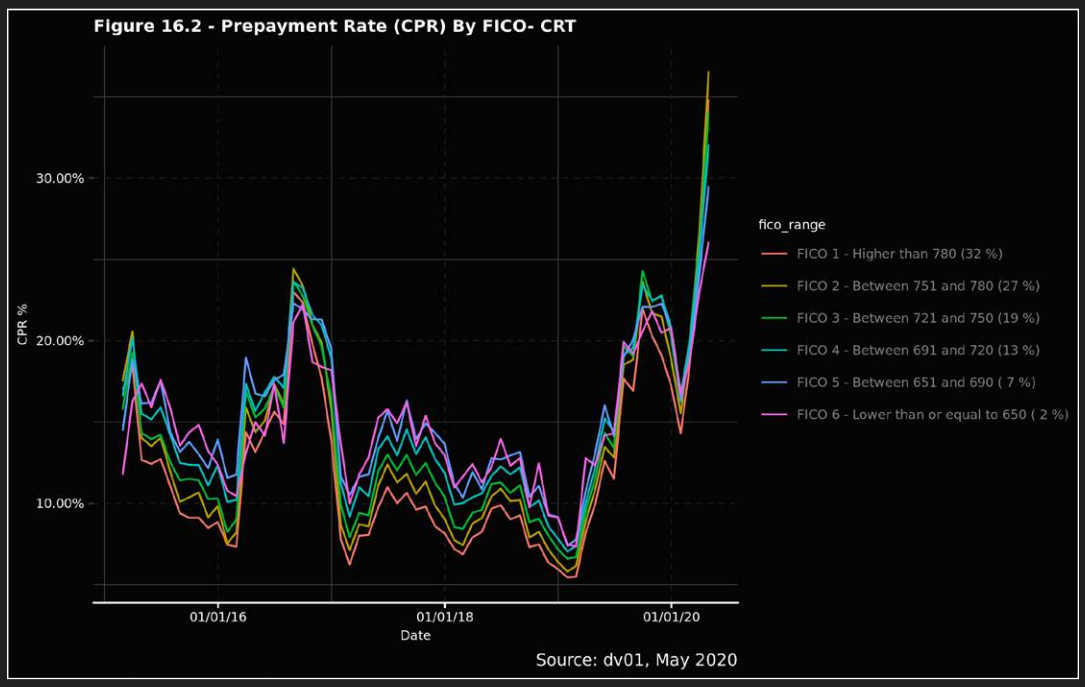
Prepayment Analysis

On the flip side of the increase in payment impairments, the substantial reduction in mortgage rates has led to a wave of refinancing, as seen in **Figure 16.1**. This shows CPR hit multi-year highs last month, up almost 15% MoM. The fact that prepayments increased so much when the mortgage industry, like all other industries, was running at lower capacity due to COVID-19 is impressive. It is important to note that prepayments are lagged because the process takes weeks or months, and borrowers often lock in rates early in the process. Most of the activity we observe are refinances that started in February or March. With rates remaining low and drifting downward from that time period, dv01 anticipates continued high rates of refinancing in the coming months.



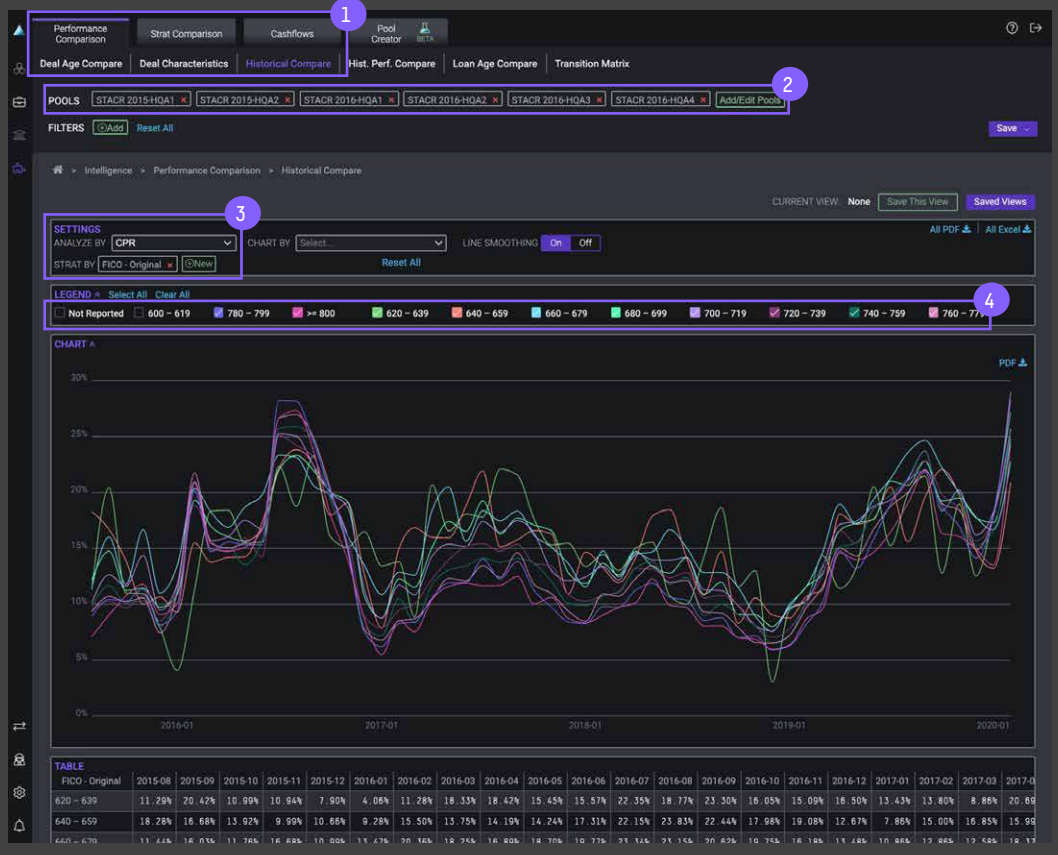
Prepayment by Collateral Attributes

Prepayment behavior does not necessarily follow the same trends as we observed in payment impairment rates. For instance, **Figure 16.2** illustrates prepayments by FICO scores, which largely follow the trends in payment impairments. The strongest pickup in CPRs were in higher credit scores; however (and importantly), each credit bucket still hit multi-year highs in prepayment speeds this month.

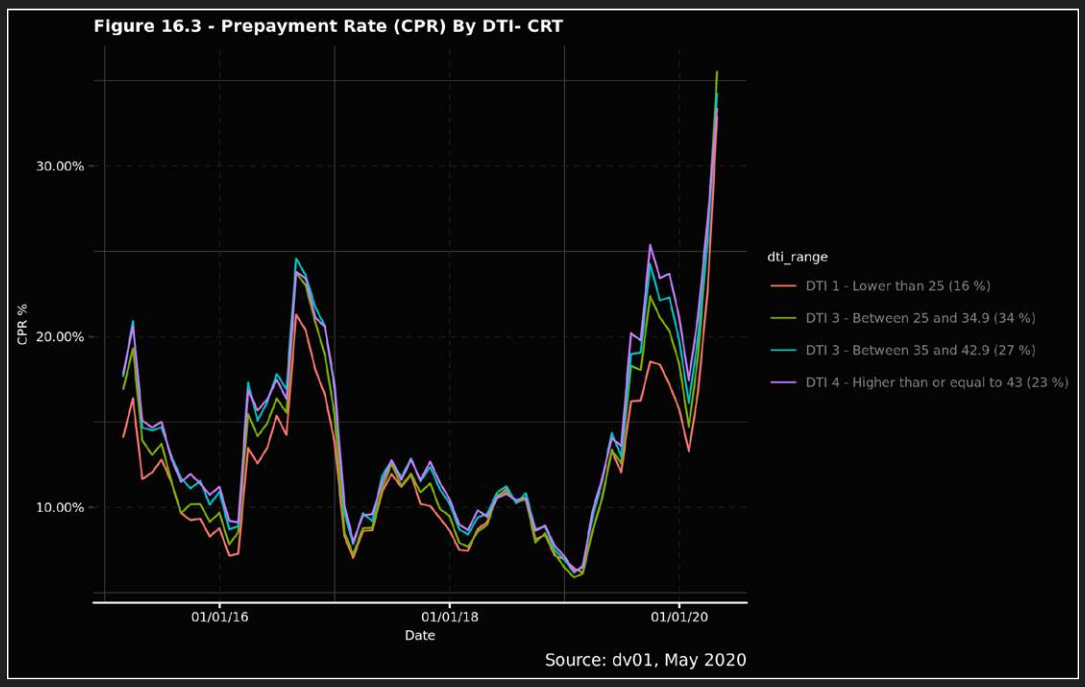


How to Analyze Prepayments on the Dv01 App

1. `Historical Analysis` can be found in our `Intelligence` product, and allows the comparison of multiple datasets at once.
2. You can choose to view multiple datasets as a `Pool Set` made up of discrete pools (shown here), or you can apply them as a single `Combined Pool` wherein the underlying collateral is commingled.
3. Analyze by `CPR` to display this metric in the chart. You can add a strat option if you would like to cohort the pool by a specific attribute (shown here as `FICO—Original`).
4. The legend allows individual strat cohorts to be displayed or hidden in the Historical Analysis chart.



CPR by DTI ratios observed in **Figure 16.3** is more nuanced; all buckets have shown similar increases, which diverges from impairment trends. Borrowers with higher DTIs are much more sensitive to changes in rates, as the payment makes up a larger portion of their income. So high DTI loans, as the chart shows, have historically shown higher CPRs than lower DTI loans. **Figure 16.4** illustrates trends by LTV and shows that CPRs have kept with their historical patterns, as higher LTV loans are showing the highest prepayment rates.



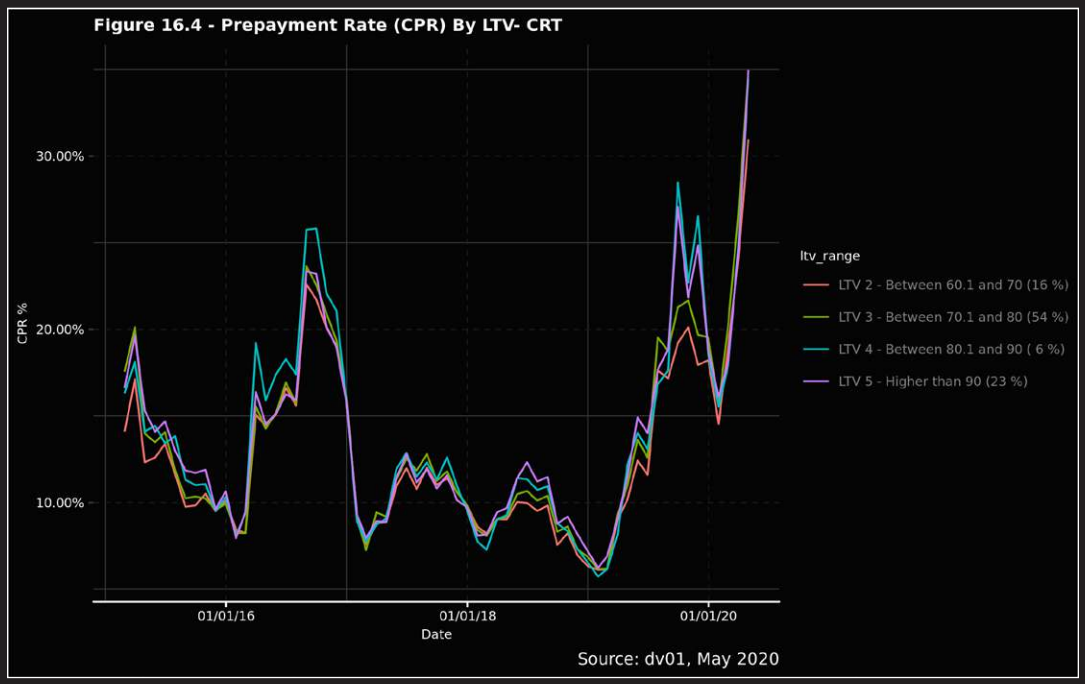
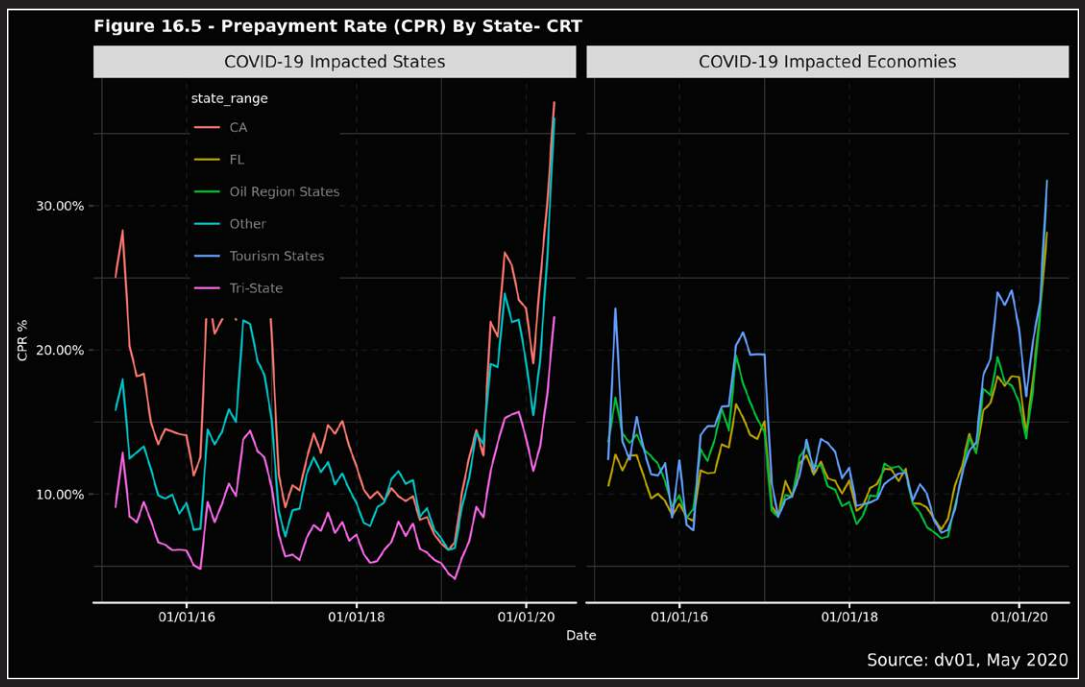


Figure 16.5 illustrates CPRs by geographic region and shows further divergence from payment impairment trends, with the highest increases in California and Other states, with the New York tri-state area showing the lowest rates. As discussed earlier, New York tri-state area loans from GSEs are not necessarily representative of the entire state. Furthermore, quarantine efforts have been more strict in these states, where many mortgage offices were closed entirely, further limiting prepayment behavior.



Closing Remarks for Mortgage Analysis

As April was the first full month with COVID-19-related performance, the immediate trends observed have important ramifications for the largest consumer credit market in the world and a huge driver of the US economy. Traditional agency loans in CRT securitizations saw relatively strong performance with robust prepayment behavior and muted impairments, at only one-fifth the change in unemployment. This is a testament to the strength of the broad mortgage market and how different the behavior is from the 2008 period. Furthermore, prepayments reached the highest rates on record as borrowers take advantage of lower rates, further limiting potential impairments. Yet, even that increase represents a massive portion of the subordinate CRT tranches and the potential for rating downgrades and substantial losses has certainly increased.

The non-QM mortgage universe was another story with impairments rising above 16% and approaching 30% for some pockets of self-employed borrowers. COVID-19 has been especially difficult on the self-employed population and that has manifested itself in the results. Even still, there are absolutely redeeming features in the performance of this universe; the fact that overall payment impairment still remained below unemployment is a testament to the strength of borrower's resolve to keep their homes, even as they've been disproportionately hammered by COVID-19-related hardships. Importantly, in both non-QM and CRT, loan servicers have stepped up immediately to engage borrowers and offer modifications to ease burdens. This process took nearly two years in the 2008 crisis and led to millions of foreclosures and precipitated a collapse in home prices.

A key theme in both sectors is the need for investors to better understand credit risk in markets that, prior to mid March, were largely taken for granted. With the results seen, all stakeholders will need clarity around modification efforts, standardized definitions and terminology, streamlined post-crisis collateral characteristics, performance metrics, and timely reporting. dv01 has spent years normalizing reporting in the online lending market to ensure this occurs, and we encourage all investors to demand the same in the mortgage markets.

About dv01

Because performance data is only available on a monthly basis (the typical payment frequency) and is usually reported with a lag, there has been little loan performance information available to see how consumers and businesses are responding to the slowdown. Since dv01 connects directly with the largest online lenders in the consumer world to cleanse, validate, and normalize loan data, we are able to make weekly observations based on daily loan performance.

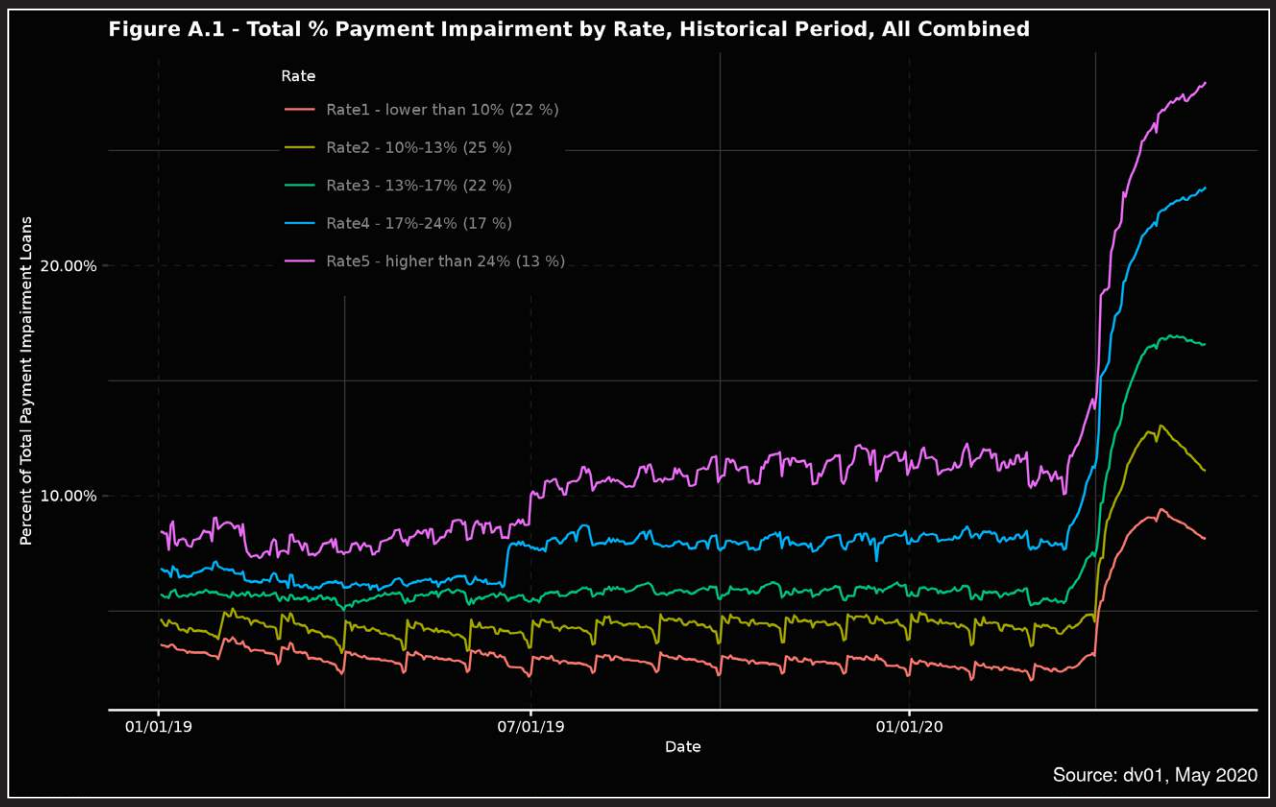
As the world's first end-to-end data management, reporting, and analytics platform for loan-level consumer lending data, dv01 is bringing unparalleled transparency and intelligence to every securitization for every investor.

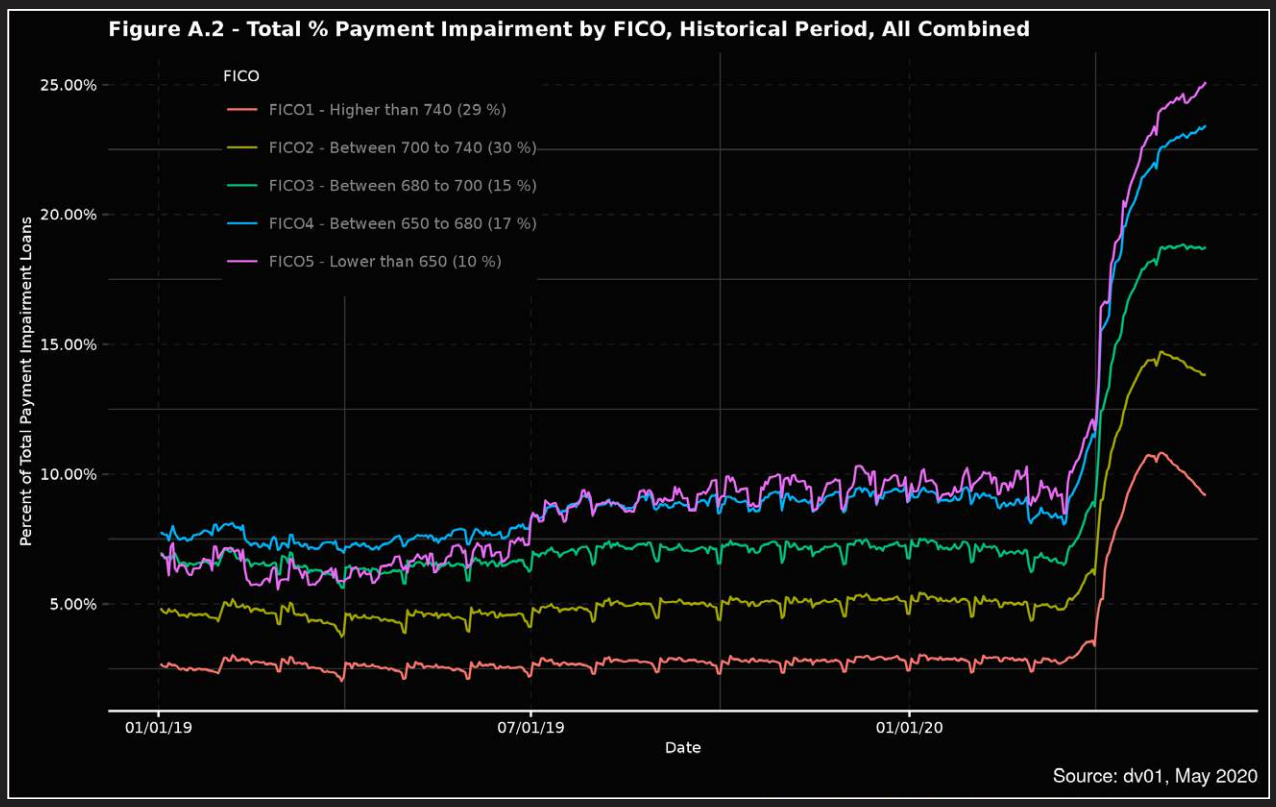
With 500+ securitizations on the platform, dv01 has partnered with 20+ issuers and provided securitization reporting and analytics on $100B transactions across consumer unsecured, mortgage, small business, and student loans. Additionally, in 2019, dv01 onboarded the CRT dataset, consisting of 83 transactions for a total notional balance of $2.6 trillion.

By building the most comprehensive available library of MBS and ABS data, dv01 is empowering the capital markets with world-class tools to make safer data-driven decisions. Learn more at dv01.co or contact sales@dv01.co for more information.

Appendix

The following charts illustrate the total percentage of payment impairments by various credit characteristics for the online lending market.





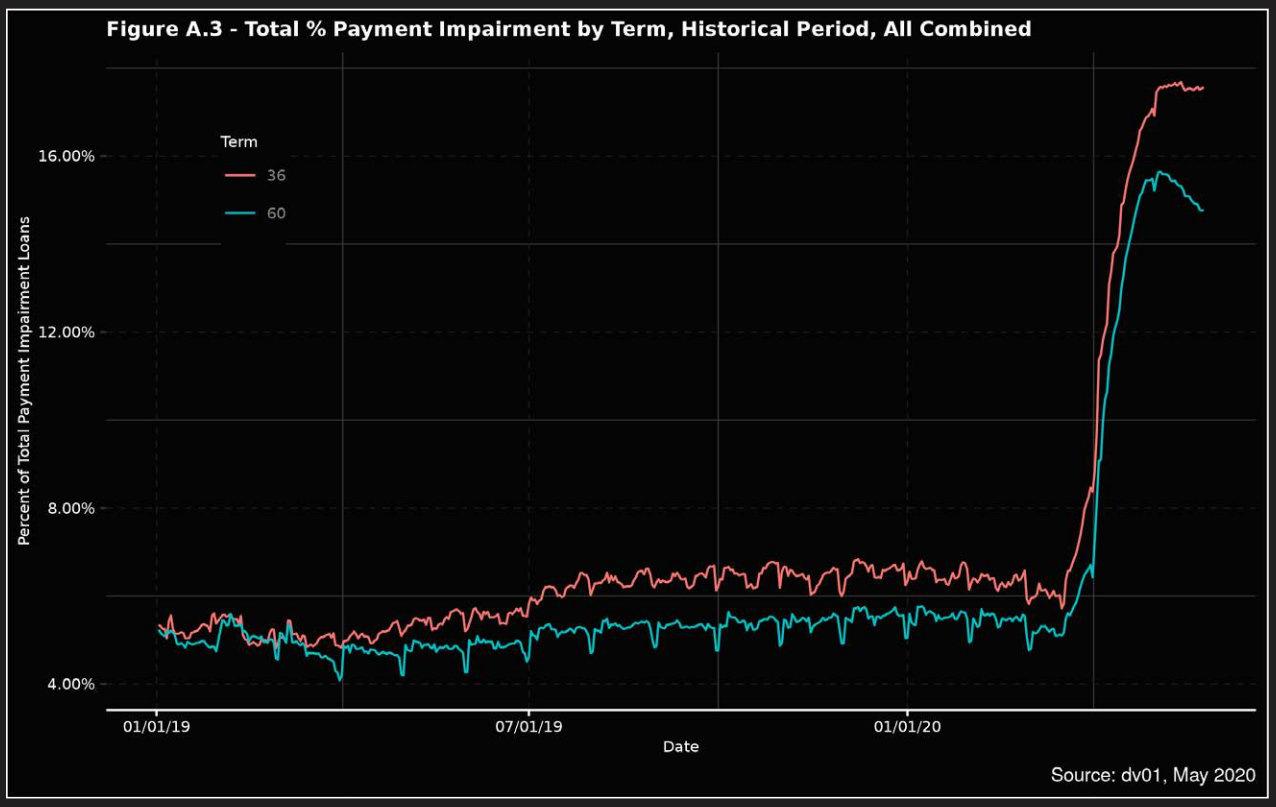


Figure A.3 - Total % Payment Impairment by Term, Historical Period, All Combined
Term
36
60
16.00%
12.00%
8.00%
4.00%
Percent of Total Payment Impairment Loans
01/01/19
07/01/19
01/01/20
Date
Source: dv01, May 2020

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- dv01 also does not seek to influence future performance or opine on the investment returns of any particular investment strategy.
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